

Third West Weekly Report Shepherd, Michael



to:

Joyce Ackerman, 'Craig Barnitz (cbarnitz@utah.gov)' 03/21/2012 10:05 AM

Hide Details

From: "Shepherd, Michael" < Michael. Shepherd@PacifiCorp.com>

To: Joyce Ackernian/R8/USEPA/US@EPA, "'Craig Barnitz (cbarnitz@utah.gov)'" <cbarnitz@utah.gov>

8 Attachments











Weekly Report 03-12 to 03-17-12.pdf Third West Weekly Log 2012-11.pdf 231545-1.pdf 231640-1.pdf 231728-1.pdf







231818-1.pdf 231934-1.pdf 231937-1.pdf

Joyce & Craig,

Attached are the reports for the week of March 12, 2012.

We had positive hits pretty much all last week. Weather looks to be a little more cooperative this week.

Please let me know if you have any questions.

Thanks,

Mike Shepherd
Project Manager
Rocky Mountain Power - Major Projects
801.220.4584 Office
801.631.1310 Cell
801.220.2797 Fax
michael.shepherd@pacificorp.com





	<u>DAILY CHECKLIST</u>
DATE:	03/12/11
General NA NA NA NA NA NA NA NA NA	Work area Health and Safety Inspection Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP Site hazard and safety instruction for all first time employees, contractors or visitors Complete Employee Meeting Record Form B (where applicable) Document required Respirator Training completion with Form H Record times and numbers of dump trucks and trailers as they leave the site with contaminated material. Confirm return of waste material manifest documents for each load with site manager. lete all CSHASP Forms (for applicable activities planned for that day) Illness/Injury Report Form A Site-Specific Training Record Form C Hot Work Permit Form D Trench/Evacuation Permit Form E Combined Space Entry Permit From F Exclusion zone operations are practiced as instructed. Decontamination unit is working properly. Workers are using decontamination unit as instmcted. Workers use personal protective equipment properly.
V	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation. Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention. Review sign-in/sign-out log throughout and at the end of the workday.
Ø	Secure the site at the end of the workday
<u>Sampling</u>	
NA ☑	Soil Confirmation sampling for any newly excavated areas Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel





	Electronically file photo files into the on-site database
	Complete Field Documentation
$oldsymbol{\square}$	Field Sample Data Sheets (FSDS)
	Logbook
\square	On-site computer database
	Label each sample media with a unique number
•	Seal sample(s) in zip lock plastic bags
	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
	Package samples for transport LAW SOP 2-1, Packaging and Shipping of Environmental Samples
	Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
	Electronically file sample reports into on-site database
	\square



Project: 3rd West Sub Station	Date: 03/12/12	_
Location: 3rd West, 1st South, SLC	Job Number:	_
Survey Conducted By: _Justin Kargis	Title:	_

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x	25		
1926.451 (Ь)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.	a a		x	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			х	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			х	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	x			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	x			
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	х			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.		2	X	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.		, a	x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x		4	я я
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.	c		х	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone active once excavations began.

Newman loaded and washed out 8 trucks and trailers. They also backfilled and compacted in the area under the old control building.

CVE line crew attached two more switches to structural steel and staged equipment for further assembly. STR continued assembly of transformers.

CVE fabricators stripped foundations and tied rebar.

Weather was warm, dry and sunny with a slight breeze. Highs in the mid 60's.



NA

determined necessary



3RD WEST SUBSTATION REMEDIATION PROJECT

HEALTH SAFETY MANAGER (HSM)

	DAILY CHECKLIST
DATE:	03/13/11
Conoral	
General NA	Work area Haalth and Safaty Ingression
	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site activities for the day
NA _.	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA	Confirm return of waste material manifest documents for each load with site
	manager.
NA Com	plete all CSHASP Forms (for applicable activities planned for that day)
NA	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
	Exclusion zone operations are practiced as instructed.
•	
	· · · · · · · · · · · · · · · · · · ·
4 - 4	☑ Workers use personal protective equipment properly.
\square	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
	Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
☑	Review sign-in/sign-out log throughout and at the end of the workday. Secure the site at the end of the workday
<u>Samplin</u>	g
NY A	Sail Confirmation compling for any navely associated areas
NA M	Soil Confirmation sampling for any newly excavated areas
$\overline{\mathcal{J}}$	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
DT A	exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soi removal

Digitally photograph each sample location and at any place field sampling personnel





☑	Electronically file photo files into the on-site database
Ø	Complete Field Documentation
\square	Field Sample Data Sheets (FSDS)
\square	Logbook
\square	On-site computer database
\square	Label each sample media with a unique number
abla	Seal sample(s) in zip lock plastic bags
\square	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
₽	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental Samples
Ø	Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees
\square	Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: <u>03/13/12</u>			
Location: 3rd West, 1st South, SLC	Job Number:			
Survey Conducted By: _Justin Kargis	Title:			

Standard	Title	In Compliance	Out of Compliance	D N/A	Corrective Action Taken and
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	Dute
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.	ej .		x	~
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.	5		x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	8
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

.

		In Compliance	Out of Compliance	N/A	. Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х	1		
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			X .	2
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	х			
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			X	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x	×		
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			х	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.	¥		х	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			7

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone active once excavations began.

Newman loaded and washed out 8 trucks and trailers. They also backfilled and compacted in the area under the old control building. R&R discussed with Newman the application of water to native soil in the EZ that has dried out and has the potential to be disturbed.

CVE line crews worked on attaching switches to structural steel.

STR continued assembly and inspection of transformers.

CVE electricians worked on wiring and assembly of electrical equipment.

Weather was mostly cloudy, warm and breezy with highs in the low 60's. No precipitation.





	DAILY CHECKLIST
DATE:	03/14/11
General	
NA	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
142 \$	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA ·	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA ·	Confirm return of waste material manifest documents for each load with site manager.
NA Com	olete all CSHASP Forms (for applicable activities planned for that day)
NA .	Illness/Injury Report Form A
NA.	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
\square	Exclusion zone operations are practiced as instructed.
	☐ Decontamination unit is working properly.
	☑ Workers are using decontamination unit as instructed.
	☑ Workers use personal protective equipment properly.
\square	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
	Observe control measures for dust and fugitive materials i.e. watering excavation
—	sites and track out prevention.
3	Review sign-in/sign-out log throughout and at the end of the workday.
☑	Secure the site at the end of the workday
<u>Samplin</u>	g .
NA	Soil Confirmation sampling for any newly excavated areas
☑	Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





	Electronically file photo files into the on-site database
	Complete Field Documentation
	Field Sample Data Sheets (FSDS)
	Logbook
	On-site computer database
$\overline{\mathbf{Q}}$	Label each sample media with a unique number
$\overline{\mathbf{Z}}$	Seal sample(s) in zip lock plastic bags
Ø	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
$ \overline{\Delta} $	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental
[]	Samples
lacktriangle	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
\square	Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: <u>03/14/12</u>
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: <u>Justin Kargis</u>	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			х	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	x			*
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	4
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.		11.	х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.			х	
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			x	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	x		T.	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (4)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.	r		х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.		0	х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	х			
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.		2	x	,
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	or and
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			х	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x		5	
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.	34 3		х	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			х	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			х	

Exclusion zone active once excavations began.

Bi-weekly meeting covered timelines, scheduling, and environmental items. R&R indicated that some of the native soil in the EZ has dried out and mentioned the application of water for dust control.

Newman loaded and washed out 8 trucks with trailers throughout the day. Some entry into the exclusion zone without suiting up was observed.

CVE fabricators worked on various tasks and tied rebar for the capacitor bank pad.

CVE line crew continued working on attaching components to structural steel.

STR received mineral oil and container for transformers and continued assembly and inspection of transformers. They determined that one of the CT terminal blocks is cracked.

Weather was warm, mostly cloudy and breezy. Temperatures in the low 60's with no precipitation.





	DAILY CHECKLIST
DATE:	03/15/11
<u>General</u>	
NA	Work area Health and Safety Inspection
NA	Review and if necessary update Activity Hazard Analyses (AHA) based on planned site
	activities for the day
NA	Safety Planning or "Tailgate" mandatory meeting for all employees and contractors prior to commencement of any site work. Instruction, review hazards, health & safety issues and any modifications to the CSHASP
NA	Site hazard and safety instruction for all first time employees, contractors or visitors
NA	Complete Employee Meeting Record Form B (where applicable)
NA	Document required Respirator Training completion with Form H
NA	Record times and numbers of dump trucks and trailers as they leave the site with contaminated material.
NA	Confirm return of waste material manifest documents for each load with site manager.
NA Comp	lete all CSHASP Forms (for applicable activities planned for that day)
NA .	Illness/Injury Report Form A
NA	Site-Specific Training Record Form C
NA	Hot Work Permit Form D
NA	Trench/Evacuation Permit Form E
NA	Combined Space Entry Permit From F
☑	Exclusion zone operations are practiced as instructed.
	☐ Decontamination unit is working properly.
	☑ Workers are using decontamination unit as instructed.
	☑ Workers use personal protective equipment properly.
$\overline{\checkmark}$	Set air samples at cardinal compass points around exclusion zone. Check
	throughout the day to ensure proper operation.
	Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
☑	Review sign-in/sign-out log throughout and at the end of the workday. Secure the site at the end of the workday
Sampling	· [
NA —	Soil Confirmation sampling for any newly excavated areas
	Stationary Air Monitoring during contaminated soil removal around the perimeter of the
	exclusion zone
NA	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary





\square	Electronically file photo files into the on-site database
\square	Complete Field Documentation
\square	Field Sample Data Sheets (FSDS)
abla	Logbook
abla	On-site computer database
all	Label each sample media with a unique number
$\overline{\mathbf{Q}}$	Seal sample(s) in zip lock plastic bags
$\overline{\mathbf{Z}}$	Complete and include Chain of Custody (COC) Form required for shipping of samples to appropriate laboratory
\square	Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental
	Samples
all	Review and disseminate sample results as received from the laboratories to Project
	Manager and other appropriate managers and employees
abla	Electronically file sample reports into on-site database
	Manager and other appropriate managers and employees



Project: 3rd West Sub Station	Date: 03/15/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: Justin Kargis	Title:

Standard	Title	☐ In Compliance	Out of Compliance	N/A	Corrective Action Taken and
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			х	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.	х			
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toe boards shall be installed.			x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	,		х	
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toe boards.			х	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			х	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			х	
1926,50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.	х			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toe boards when more than 10 feet high and when less than 45 inches of work space.	i.		х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			х	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х		×	
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			х	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.	х			
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.	x			
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a) (9)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x	2		
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.	2		x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.	x			
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.	x			
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer or the tool is double insulated.	x			
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.			x	

Exclusion zone active once excavations began.

Newman continued backfilling and compaction in area east of bay 2 in preparation of laying conduit and duct banks. Exclusion zone practices were somewhat relaxed as heavy equipment was frequently entering and exiting throughout the day.

CVE fabricators continued working on structural steel foundations.

CVE line crew attached componentry to structural steel.

CVE electricians worked on wiring and electrical work on structural steel.

STR continued transformer set up and preparation.





		DAILY CHECKLIST
DA'	ГЕ:	3/16/12
NA NA	General ✓ NA NA NA NA NA NA NA NA	
	☑	Set air samples at cardinal compass points around exclusion zone. Check throughout the day to ensure proper operation.
		Observe control measures for dust and fugitive materials i.e. watering excavation sites and track out prevention.
	☑	Review sign-in/sign-out log throughout and at the end of the workday. Secure the site at the end of the workday
	<u>Samplir</u>	ng
NA ☑		Soil Confirmation sampling for any newly excavated areas Stationary Air Monitoring during contaminated soil removal around the perimeter of the exclusions zone
	NA .	Personal Breathing Zone Monitoring on personnel conducting contaminated dust and soil removal
	NA	Digitally photograph each sample location and at any place field sampling personnel determined necessary
	[7]	Electronically file whote files into the engite database





ablaComplete Field Documentation \checkmark Field Sample Data Sheets (FSDS) \square Logbook NA On-site computer database Label each sample media with a unique number Seal sample(s) in zip lock plastic bags \checkmark Complete and include Chain of Custody (COC) Form required for shipping of samples to $\sqrt{}$ appropriate laboratory Package samples for transport IAW SOP 2-1, Packaging and Shipping of Environmental \checkmark Samples NA Review and disseminate sample results as received from the laboratories to Project Manager and other appropriate managers and employees NA Electronically file sample reports into on-site database



Project: 3rd West Sub Station	Date: 3/16/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: Justin Kargis	Title:

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.	*		x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.			x	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.			x	
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.			х	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.			х	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	x			
1926.20 (b)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.		7	X	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			x	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			x	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.			x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.		g.	х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	x			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			х	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	*
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.			x	,
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			х	
1926.102 (a) (1)	Eye and face protection shall be provided.	х			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	x			
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	-
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.		×	х	-
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.		Đ	х	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			х	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.	=		x	
1926.404 (f) (7)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer of the tool is double insulated.			x	
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.			x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			9
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			х	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.	x			

Exclusion zone active once excavations began.

Newman began digging trenches for 46 kV conduit lines west of bay 2. Somewhat relaxed EZ observance with entering and exiting while not being suited up while excavations were taking place. Newman was again encouraged to apply to water to dried native material as dusty conditions have resulted from warm and dry weather over the last 5 days.

CVE line crew began erecting structure steel in bay 2.

CVE fabricators continued drilling drainage holes at the base of structure columns in bay 1. STR began processing oil in transformer 2 and will work over night for the next two days. Weather was dry with overcast skier. Breezy with temperatures in the high 60s and no precipitation.



3rd West Substation Site Project Safety Audit

Project: 3rd West Sub Station	Date: 3/17/12
Location: 3rd West, 1st South, SLC	Job Number:
Survey Conducted By: <u>Justin Kargis</u>	Title:

*					
Standard	Title	In Compliance	Out of Compliance	N/A	Corrective Action Taken and Date
1926.59	Hazard Communication Program, List of Chemicals, Training, MSDSs.			x	
1926.500 (b) & (d) (old standard)	Guardrails on open sided floors, floor holes and runways.		a.	X	
1926.404 (b)	Ground fault circuit interrupters or an assured equipment grounding conductor program in use.			х	
1926.451 (b)	The employer shall instruct each employee in the recognition and avoidance of unsafe conditions.		6	x	
1926.451 (d)	Tubular welded scaffolds shall be properly braced so that they are plumb, square and rigid; legs on plumb, adjustable, mud sills, etc. to support the maximum load; guardrails and toeboards shall be installed.		a a	x	
1926.100 (a)	Head protection, where there is a possible danger of head injury.	x			

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.652 (a) (1)	Excavation protective systems; examination by competent person when less than 5 feet in depth.			х	
1926.20 (b) (2)	Employer responsibility to initiate and maintain safety and health programs.	х			
1926.20 (b) (1)	Employer responsibility to provide for frequent and regular inspections by designated competent persons.			х	
1926.451 (e)	Manually propelled scaffolds shall have tight planking for the full width, platforms secured, ladder or stairway provided, suitable footing, stand plumbs, wheels locked, guardrails and toeboards.			х	
1926.1052 (c) (1)	Stair rail and handrail along each unprotected edge.			x	,
1926.25 (a)	Debris, scrap lumber with protruding nails, not cleared for work areas, stairs and around structures.			x	
1926.50	First aid shall be available in the absence of an infirmary, or other that is reasonably accessible; first aid supplies shall be accessible and telephone numbers posted.			х	
1926.451 (a) (13)	Scaffolding safe access not provided by ladder or equivalent.			x	
1926.651 (k) (1)	Excavations, protective systems, inspected daily by a competent person and as needed.	-		x	
1926.403 (b) (2)	Employer shall ensure electrical equipment is free from recognized hazards, is suitable, used in accordance with the listing, labeling or certification.		2	x	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a)	Scaffolding shall have guardrails and toeboards when more than 10 feet high and when less than 45 inches of work space.			х	
1926.405 (g) (2)	Flexible cords shall be used without splice or tap; strain relief shall be provided.			x	
1926.405 (b)	Electrical boxes, fittings shall have covers, faceplates or canopy and holes shall be smooth where cords pass through; and unused openings in cabinets/boxes shall be closed.	х			
1926.701 (b)	Reinforcing steel onto which employees could fall shall be guarded.			x	
1926.1053 (b) (1)	Portable ladder side rails extend at least 3 feet or be secured at top.			x	
1926.651 (j) (2)	Excavations shall have materials or equipment placed at least 2 feet from the edge.			x	
1926.651 (c) (2)	Excavations shall have a safe means of egress such as ladders, ramps, etc.			x	
1926.150 (c) (1)	Portable fire fighting equipment shall be provided and extinguishers shall be inspected periodically.			x	
1926.102 (a) (1)	Eye and face protection shall be provided.	x			
1926.300 (b) (2)	Guards for power tools shall be used and moving parts of equipment shall be guarded.	х	s		
1926.350 (a)	Oxygen cylinders in storage shall be separated from fuel gas cylinders by at least 20 feet or a ½ fire resistance barrier.			x	

Standard	Title	In Compliance	Out of Compliance	O N/A	Corrective Action Taken and Date
1926.405 (a) (2) (ii) (e) & (f)	Temporary lights shall be protected from breakage, not suspended by their cords and extension cord.			Х	-
1926.405 (a) (2) (ii) (j)	Extension cords used with portable electric tools shall be of three wire type and designed for hard or extra hard usage.	x			
1926.105 (a)	Workplaces more than 25 feet above the ground or water shall have safety nets when ladder, safety line/belts, temporary floors, scaffolds, catch platform are not practical.			x	
1926.1051 (a)	Stairway or ladder shall be provided at all access points where there is a break in elevation of 19 inches or more.			x	
1926.451 (a) (2)	Scaffolding footing or anchorage shall be sound, rigid and capable of carrying the maximum intended load.			x	
1926.500 (c) (1) (old standard)	Wall opening shall be guarded.			x	
1926.404 (f)	Electrical equipment connected by cord and plug shall be grounded except if there is an isolating transformer of the tool is double insulated.			х	
1926.556 (b) (2)	When working from an aerial lift, a full body harness and lanyard attached to the boom or basket.	x			
1926.501 (b) (1) (new standard)	Guardrails, safety nets or personal fall arrest system shall be used at 6 feet or more.			х	

		In Compliance	Out of Compliance	N/A	Corrective Action Taken and
Standard	Title				Date
1926.451 (a) (14)	Scaffold planking shall extend over their end support not less than 6 inches and not more than 12 inches.		9	x	
1926.602 (a) (9)	Bi-directional earth moving equipment shall have audible alarms.	x			
1926.451 (a) (3)	Scaffolding shall be erected, moved, dismantled or altered under the supervision of a competent person.			x	
1926.550 (b) (2)	Cranes, crawler, truck or locomotive, shall meet the design, testing, maintenance, and operation per ANSI B30.5_1968. The most recent certification shall be on file until a new one is prepared.	х			

Comments:

Exclusion zone active once excavations began.

Newman continued digging 46kV conduit line trenches and placed conduit. The exclusion zone fence was left down along the east side due to high winds and will be replaced on Monday. STR continued processing oil in the transformers and will work over night again. Weather was windy and dry with temperatures in the mid 60s.



РНОТО 1

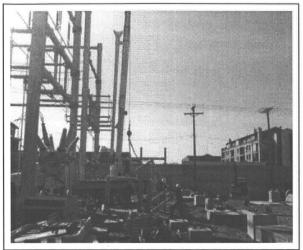


PHOTO 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:

SCALE:

REVIEWED BY:
DCR

DRAWN BY:
DATE
JMK

03/12/12

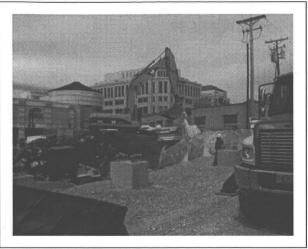
FILE:

SITE PHOTOGRAPHS

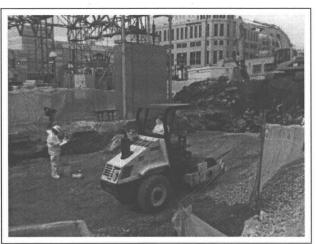




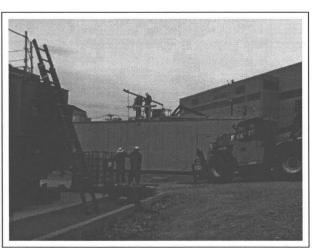
РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 03/13/12	FILE:	

SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3

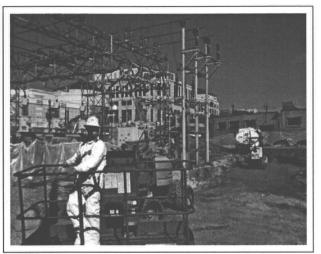
R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

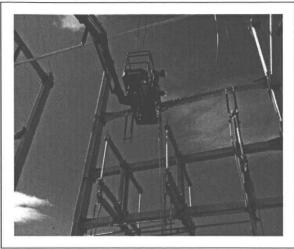
DESIGNED BY:	SCALE:	REVIEWED BY: DCR
DRAWN BY: JMK	DATE 03/15/12	FILE:

SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.

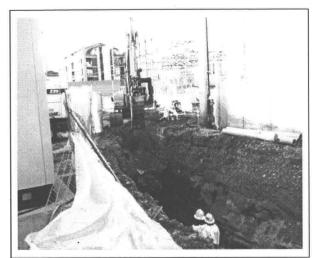
47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE 03/15/12	FILE:	

SITE PHOTOGRAPHS





РНОТО 1



РНОТО 2



РНОТО 3



РНОТО 4

R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070
(801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE: 03/16/12	FILE:	

SITE PHOTOGRAPHS





РНОТО 5



РНОТО 6



РНОТО 7

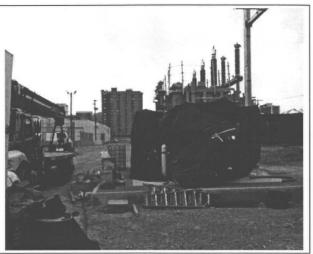
R & REnvironmental, Inc.
47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY: DCR	
DRAWN BY: JMK	DATE: 03/16/12	FILE:	

SITE PHOTOGRAPHS





РНОТО 1



PHOTO 2



РНОТО 3

R & REnvironmental, Inc.

47 West 9000 South, Suite #2, Sandy, Utah 84070 (801) 352-2380 • Fax: (801) 352-2381

PROJECT NO:

DESIGNED BY:	SCALE:	REVIEWED BY:	
		DCR	
DRAWN BY: JMK	DATE: 03/17/12	FILE:	

SITE PHOTOGRAPHS



PROJECT NAME:	Third West Sub - I	Rebuild	DATE:	Sund	lay, March 11,	2012
PO & Work Order NO. :	3000078050 / 100	35803	MAIN CONT	RACTOR	Cache Valle	y Electric
Crew Start Time:	3:55	Crew Stop Time:	18:55	, .	Tot Hrs mns:	12:00
	3:50	FCR Stop Time:	18:55		Tot Hrs mns:	12:05
Use military time format 00:00		TORTOLOP TIME			- 1001111011111101	12.00
oscillatorial octor	•		• •			
WEATHER CONDITIONS:		Sunny - 35 degre	es in AM, 60 de	grees in th	e PM	
DESCRIPTION: (work performe	d. general commen	ts. Instructions to	contractor. # c	f crew me	mbers onsite.	,
Only crew working today is STR. STF Electrical Crew = 0, Newman =0, ST			ishings. CVE F	ab Crew ≃0,	CVE Line Crew	= 0, CVE
·						
IF WORKING IN ENERGIZED SU	JBSTATION:					
Dispatcher login, name and time:	Earl McGlore 0650		· · · · · · · · · · · · · · · · · · ·			
Dispatcher logout, name and time:	Mike Spence 1855					
DISCREPANCIES:		-	IMMEDIATE CO	ORRECTIV	/E ACTION TA	KEN:
3/2 - Two aux relays missing from Pederso	on Switchgear.		Pederson indicates		own by Pederson a	ind RMP
3/11 - New gaskets for the LV bushings we	ore not included in the chin	oning crates, so	PM's and will be sh Sent Ken Foster an		fuing the issue	
shiopina aaskets were inspected, cleaned		philip clates, so		e-mail identi	lying the issue	
11/30 - identified an additional retaining was	all that is below grade and	does not show on the	Will excavate to de	termine dime	nsions.	
12/15 - Excavated to locate the 46 kV cabl didn't find them. Will try again. Actual dep	oth will be much deeper that		Sent e-mail to Roge	er F.	_	_
DELAYS OR LOST TIME ENCOU		mating to maintain a no	citivo proceuro on V	for #4	ou block serves. T	Thorouge no
New CT terminal block has been ordered or pressure on xfmr #1 this morning when we	from Hyundai. STR is atte	mpting to maintain a po	sitive pressure on X	fmr#1 until n	ew block anives. 1	here was no
New CT terminal block has been ordered to pressure on xfmr #1 this morning when we	from Hyundai. STR is atte e started working.	mpting to maintain a po	sitive pressure on X	fmr#1 until n	ew block anives. 1	here was no
New CT terminal block has been ordered to pressure on xfmr #1 this morning when we EQUIPMENT (working, delivered)	from Hyundai. STR is atte e started working. d, idle):					
New CT terminal block has been ordered to pressure on xfmr #1 this morning when we	from Hyundai. STR is atte e started working. d, idle): 1 dumpster, office trailer, c	onex , exclusion zone c	onex, (2), tool traile	r, crew truck.	CVE Line Crew:	Pickup (2),
New CT terminal block has been ordered of pressure on xfmr #1 this morning when we be been started to be been ordered to be been ordered to be been ordered to be been well as the been started to be been started to be been ordered to be been	from Hyundai. STR is atte e started working. d, idle): 1 dumpster, office trailer, c 1 trachoe (4), loader, bobo	onex , exclusion zone c	onex, (2), tool traile	r, crew truck. khoe. STR =	CVE Line Crew: Crew truck, tool tra	Pickup (2), iler, boom
New CT terminal block has been ordered to pressure on xfmr #1 this morning when we be been started to be been ordered to pressure on xfmr #1 this morning when we be been started to be been started to be been ordered to be be been ordered to be been ordered to be be been ordered to be been ordered to be been ordered to be been ordered to be be been ordered to be been ordered to be been ordered to be been ordered to be be been ordered to be been ordered to be been ordered to be be been ordered to be been ordered to be be been ordered to be b	from Hyundai. STR is atte e started working. d, idle): 1 dumpster, office trailer, c 1 trachoe (4), loader, bobo	onex , exclusion zone c	onex, (2), tool traile	r, crew truck.	CVE Line Crew: Crew truck, tool tra	Pickup (2),



PROJECT NAME:	Third West Sub	- Rebuild	DATE :	Mond	lay, March 12,	2012
PO & Work Order NO. :	3000078050 / 10	0035803	MAIN CONTE	RACTOR :	Cache Valle	y Electric
Crew Start Time:	6:55	Crew Stop Time:	18:55		Tot Hrs mns:	12:00
FCR Start Time:	6:40	FCR Stop Time:	18:58		Tot Hrs mns:	12:18
Use military time format 00:00		•			-	
•						
WEATHER CONDITIONS:	•	Sunny - 35 degre	es in AM , 66 deg	rees in the	PM	
DESCRIPTION: (work perform	med general comme	ente instructions to	contractor # of	f crew me	mhere oneite	`
R&R set up four monitors. CVE Liand F foundations. CVE Electrical more trucks in the PM. Newman h Newman is placing material in the protection railing and ropes. They in Xfmr #1. STR has moved most CVE Fab Crew = 2, CVE Line Cre	I Crew mounted the CT J nas placed material in the area south of transforme mounted bracing for the of the accessories into the ew = 5, CVE Electrical C	Junction Box . Newman e old control bldg excaver er #2. STR mounted bo radiators and are work he yard and will focus o	loaded out four tm ation and Wilding i xes on the north si ing on connecting n installing CTs ar	ncks between is providing ide of the translated all of the Cond and bushings	en 7:00 and 9:00 compaction test ansformers for s If wiring and LV is in Xfmr #2 tomes	AM and four ing. toring the fa bushing lea
Dispatcher login, name and time:	Gus Montanez 0640	<u> </u>				
Dispatcher logout, name and time:						
DISCREPANCIES:	Ibany Nicison 1000	· · · · · · · · · · · · · · · · · · ·	IMMEDIATE CO	RRECTIV	F ACTION TA	KEN.
3/2 - Two aux relays missing from Ped	lerson Switchgear.		Pederson indicates			
			PM's and will be shi	ooed soor	<u> </u>	
3/11 - New gaskets for the LV bushing		hipping crates, so	Sent Ken Foster an	e-mail identif	ying the issue	
shippina aaskets were inspected, clear	neu, anu installe					
11/30 - Identified an additional retaining Demo Plan.	g wall that is below grade a	nd does not show on the	Will excavate to dete	ermin e dimer	nsions.	
12/15 - Excavated to locate the 46 kV	•	, ,	Sent e-mail to Roge	r F.		
didn't find them. Will try again. Actual DELAYS OR LOST TIME ENC		than design of new bank				
STR identified that the power cable fro replacement. EQUIPMENT (working, delive CVE fab crew: Portable toilet (3), forkl boom truck, JLG (2), tool trailer. Newstruck, processing trailer, generator.	om their processing trailer to ered, idle): lift, 1 dumpster, office trailer	, conex , exclusion zone c	onex; (2), tool trailer	r, crew truck.	CVE Line Crew:	Pickup (2),
OSHA Recordable Safety Inc	idents:			Reported	by:	Time:



					•	
PROJECT NAME:	Third We	st Sub - Rebuild	DATE:	Tues	day, M arch 13,	, 2012
PO & Work Order NO. :	3000078	050 / 10035803	MAIN CONT	RACTOR	: Cache Valle	y Electric
Crew Start Time:	6:50	Crew Stop Time:	17:35	i	Tot Hrs mns:	10:45
FCR Start Time:	6:43	FCR Stop Time:	17:38		Tot Hrs mns:	10:55
Use mi/itary time format 00:00		, or or or				10.00
Ose minutely time format oblide						
WEATHER CONDITIONS:		Sunny - 38 degre	es in AM, 63 de	grees in th	e PM	
DESCRIPTION: (work perfo						
R&R set up four monitors. CVE to the E-W wire bus, completed it switchgear. They also moved alu Fab Crew tied rebar mats for the east columns. Newman loaded on Newman has placed material in the and LV bushings on Xfmr #2. ST when their processing plant was STR = 4, R&R = 1, Wilding =1.	nstallation of piping minum bus and re remaining spread ut four trucks betw he old control bldg R has secured ne	g to the two switches installed bar to provide space for the oil footings and capacitor banks. een 7:00 and 9:00 AM and fou excavation and Wilding is prow power cable for their oil process.	on the west side of storage tank that CVE Electrical Crumore trucks in the viding compaction tessing plant to rep	f the CBs a will be delive ew mounted to PM, for a testing. ST place the ca	nd started install vered in the mom d conduits and liq total of 203 load TR installed HV a able that was stol	ling bus on thing. CVE ghts on the ds, to date. and LV CTs len, probabi
IF WORKING IN ENERGIZED	SUBSTATION	:				
Dispatcher login, name and time:	Gus Montan	ez 0643				
Dispatcher logout, name and time	e: Barry Nielso	n 2122 (called in late)				
DISCREPANCIES:			IMMEDIATE CO	ORRECTIV	VE ACTION TA	AKEN:
3/2 - Two aux relays missing from Pe	derson Switchgear.		Pederson indicates		own by Pederson	and RMP
Old Name and the Court Live and the			PM's and will be sh		himmin	
3/11 - New gaskets for the LV bushin shipping aaskets were insoected, cle	=	in the snipping crates, so	Hyundai has indicat for oermanent insta		nipping gaskets ar	e acceptable
on painta appress were inspected, ore	arica, aria motorio	-	tor corregations inde			
<u>-</u>	* ***					
11/30 - Identified an additional retaini Demo Plan.	ing wall that is below	grade and does not show on the	Will excavate to det	termine dime	nsions.	
12/15 - Excavated to locate the 46 k	/ cables exiting the w	vest side of the yard. Dug 8' and	Sent e-mail to Roge	er F.		
didn't find them. Will try again. Actua		deeper than design of new bank	<u> </u>			
DELAYS OR LOST TIME EN						
STR identified that the power cable fi replacement.	rom their processing	trailer to their generator has been	cut and stolen. Will	work with the	em to identity a loc	al Source for
EQUIPMENT (working, deliv	vered idle):				<u> </u>	
CVE fab crew: Portable toilet (3), for boom tmck, JLG (2), tool trailer. New truck, processing trailer, generator.	klift, 1 dumpster, offi					
OSHA Recordable Safety In	cide n ts:			Reported	by:	Time:
				.==.		ļ
				i	,	4



PROJECT NAME:	Third Wes	st Sub - Rebuild	DATE:_	Wednesda	ay, March 14	1, 2012
PO & Work Order NO. :	30000780	050 / 10035803	MAIN CONTR	RACTOR :C	Cache Valley	y Electric
Crew Start Time:	6:45	Crew Stop Time:	20:55	То	t Hrs mns:	14:10
FCR Start Time:	6:43	FCR Stop Time:	20:58	то	t Hrs mns:	14:15
Use military time format 00:00					-	
, and an				•		
WEATHER CONDITIONS:		Sunny - 40 degre	es in AM, 65 deg	rees in the P	М	
DESCRIPTION: (work perfe	ormed, general c	omments, instructions to	contractor. # of	f crew memb	ers onsite.) .
switchgear. CVE Fab Crew mounloaded 20 batteries in the confor a total of 211 loads, to date. STR installed HV bushings, conforted Fab Crew = 0, CVE Line C	trol bldg (3/13). New Newman has placed nected the HV and L	wman loaded out four trucks be d material in the old control blo LV CTs, installed the final radia	etween 7:00 and 9 lg excavation and ' itor, and set the br	:00 AM and for Wilding is prov acket for the H	ur m ore truck riding compac IV arreste r s o	s in the PM ction testing
	D OUDOTATION					
IF WORKING IN ENERGIZE						
Dispatcher login, name and time				_		
Dispatcher logout, name and time DISCREPANCIES:	ne: Jim Batt 205	<u> </u>	IMMEDIATE CO	NODECTIVE .	ACTION TA	KEN.
3/2 - Two aux relays missing from P	ederson Switchgear		Pederson indicates to			
5/2 - Two aux relays missing nom r	ederson ownerigear.		PM's and will be ship		by i ederson a	III I III
3/11 - New gaskets for the LV bushi shlooina aaskets were inspected, cle	-	in the shipping crates, so	Hyundai has indicate for permanent install	ed that the shipp	ing gaskets are	e acceptable
11/30 - Identified an additional retair Demo Plan.	ning wall that is below	grade and does not show on the	Will excavate to dete	ermine dimension	ns.	
12/15 - Excavated to locate the 46 k			Sent e-mail to Roge	r F .		
didn't find them. Will try again. Actu DELAYS OR LOST TIME EN	Jai deoth Will be much NCOUNTERED:	deeper than design of new bank				
STR identified that the power cable replacement.		trailer to their generator has been o	cut and stolen. Will v	work with them to	identify a loca	il source for
EQUIPMENT (working, deli CVE fab crew: Portable toilet (3), fo boom truck, JLG (2), tool trailer. Ne truck, processing trailer, generator.	orklift, 1 dumpster, offic					
OSHA Recordable Safety I	ncidents:			Reported by	:	Time:
						ŀ



PROJECT NAME:	Third W	Vest Sub - Rebuild	DATE:	Thurso	day, M arch 15	, 2012
PO & Work Order NO. :	300007	78050 / 10035803	MAIN CONT	RACTOR,:	Cache Valle	y Electric
Crew Start Time:	6:50	Crew Stop Time:	19:05	5	Tot Hrs mns:	12:15
FCR Start Time:	6:41	FCR Stop Time:	19:10)	Tot Hrs mns:	12:29
Use military time format 00:00				<u> </u>	•	
,						
WEATHER CONDITIONS:		Sunny - 44 degre	es in AM, 65 de	grees in the	PM	
DESCRIPTION: (work perfo	rmed, genera	l comments, instructions to	contractor, # c	of crew mei	mbers onsite	.)
and LV arrrestors, and the XO be	cracked concreted drilling 2" holes ast 46 kV getawaten from the old cots on Xfmr #2. Kushing. STR is	in the SW comer of the switchgo in the grouted area under the co ay and some angle iron framing t	ear floor and I sen blumns on G found of facilitate placem facilitate the trend and we discussed to start pulling var	t pictures to dations. CVE ent of the nech for the 46 to solutions for	John Mancini w E Electrical Crev w conduit risers kV duct bank. \$ the grounding	ith proposed v removed s. N ewman STR installed
	·		· 			
IF WORKING IN ENERGIZE		ON:			•	
Dispatcher login, name and time						
Dispatcher logout, name and tim	e: Jim Batt 1	716				
DISCREPANCIES:		<u> </u>	IMMEDIATE C Pederson has conf			
3/2 - Two aux relays missing from Pe			r edetsoff has coff		- Telays will be still	, ,
	· · · · · · · · · · · · · · · · · · ·					
11/30 - Identified an additional retain Demo Plan	ing wall that is belo	ow grade and does not show on the	Will excavate to de	termine dimen	isions.	
12/15 - Excavated to locate the 46 k didn't find them. Will try again. Actu DELAYS OR LOST TIME EN	al deoth will be mu	uch deeper than desian of new bank	Sent e-mail to Rog	er F.	- -	
STR identified that the power cable treplacement.			cut and stolen. Will	work with ther	m to identify a loc	al source for
EQUIPMENT (working, deli	vered, idle):		 ,			
CVE fab crew: Portable toilet (3), fo boom truck, JLG (2), tool trailer. Net truck, processing trailer, generator.	rklift, 1 dumpster, d					
OSHA Recordable Safety In	ncidents:			Reported	by:	Time:



PROJECT NAME:	Third We	est Sub - Rebuild	DATE :	Friday, March 16	5, 2012
PO & Work Order NO. :	3000078	8050 / 10035803	MAIN CONTRA	ACTOR : _ Cache Val	ley Electric
Crew Start Time:	6:50	Crew Stop Time:	23:59	Tot Hrs mns	: 17:09
FCR Start Time:	6:37	FCR Stop Time:	19:38	Tot Hrs mns	: 13:01
Use military time format 00:00		•	10.00		
WEATHER CONDITIONS: DESCRIPTION: (work perfor R&R set up four monitors. CVE or including four of the box structure the 2" holes in the grouted "G" fdn CVE Electrical Crew installed cond #1. Newman placed one lift in the of the excavation except for a shooil processing equipment and start their first cold trap test (7 oz. of wa of the replacement CT blocks and will install the insulated cable, prov BOM. Alan Bezzant came by and CVE Fab Crew = 3, CVE Line Cre	rews, except line columns. They see and did prep we duits on the north excavation areat run into the eated pulling vacuulater). The 2000 lewe discussed wided by Hyunda provided me CII	crew, worked 8 hours again too set the four columns and assem rork for the installation of conduit in 138 kV termination structure a at then spent the rest of day excapt st getaway and a short section at um around 8:30. By around 11:0 hour test was 8 and the 2400 ho ith Dragos the options for the gr it, rather than wait for Hyundai to PS and FERC training. Ron Olie	contractor, # of collay. CVE Line Crew bled two upper bean ts at the deadend strand installed the concavating for the 46 kV across the area east 00 they were pumpin our test was 6. Ken ounding of the arres to provide the "bus backen will be providing the collaboration of the collaboration of the arres to provide the "bus backen will be providing the collaboration of the collaboration	rew members onsite received two loads of some CVE Fab Crew confuctures af 100 South a luits into the control cate duct bank. They compore the east getaway. Some goil into Xfmr #2 and a Foster came by and ditters and it was determine that are called out of ginspector support for	etructural steel, apleted drilling and 550 West. Sinet for Xfmr oleted the bulk at 1600 they discopped off one and that STR on the Hyunda
IF WORKING IN ENERGIZED Dispatcher login, name and time: Dispatcher logout, name and time	Ken Barto 0		will be working 24/	thru processing durati	on
DISCREPANCIES:				RECTIVE ACTION	
3/2 - Two aux relays missing from Ped	lerson Switchgear.			ed that aux relays will be s	
11/30 - Identified an additional retainin	g wall that is belov	v grade and does not show on the	Will excavate to deterr	nine dimensions.	
Demo Plan. 12/15 - Excavated to locate the 46 kV didn't find them. Will try again. Actual DELAYS OR LOST TIME ENC	l depth will be muc		Sent e-mail to Roger F		
Note: Cold trap test results: 1600 hours from the cold trap test results: 1600 hours from the cold trailer from truck, processing trailer, generator.	urs = 7, 1800 hours ered, idle): lift, 1 dumpster, off	fice trailer, conex , exclusion zone co			
		•			
OSHA Recordable Safety Inc	cidents:		R	eported by:	Time:



PROJECT NAME:		Third West Su	b - Rebuild	DATE:	Satur	day, March 17	, 2012
PO & Work Order NO. :	<u> </u>	3000078050 /	10035803	MAIN CONT	RACTOR	:_ Cache Vall	ey Electric
Crew Start Time:	0:0	00	Crew Stop Time:	22:00) .	Tot Hrs mns:	22:00
FCR Start Time:	0:0	00	FCR Stop Time:	22:00)	Tot Hrs mns:	22:00
Use military time format 00:0						-	
and following							
WEATHER CONDITIONS	: <u>-</u>		Cloudy and Breezy - 4	10 degrees in Al	M, 60 degre	es in PM	
DESCRIPTION: (work pe							
R&R set up four monitors and relieved him this morning at 06 at 0800 = 2 oz., and at 1200 = less than 2 oz. If the test does than 2 oz. so STR started purreturned to the site at 1600 ho today. Newman resumed digg =0, CVE Line Crew = 0, CVE	STR has not result nping oil in urs and fill ging of 46 l	ng of vacuum wer s determined they It in less than 2 or nto the LTC and the lling of the transforkV duct bank and	nt throughout the night w y will proceed with filling in z. they will continue pulling then shifted to the main to conner was completed at a diplacing of conduit and conduit	ith testds taken at Xfmr #2 with oil if ag vacuum until it on the process approximately 200 completed the wor	midnight = 6 the 1200 ho does. The should take 0 hours. N	6 oz. and at 040 urs cold trap tes 1200 hour test r about 10 to 12 o CVE crews ar	00 = 3 oz., arto st results in resulted in less hours. Ron
IF WORKING IN ENERGIZ							
Dispatcher login, name and tir			er last night that we will b				
Dispatcher logout, name and t	ime: ID	Don't know if Ron	called dispatcher when j				
DISCREPANCIES:	Dadama	0.4.1	•	IMMEDIATE C			
3/2 - Two aux relays missing from	Pederson :	Switchgear.		Pederson has confi	imeo mai au	x relays will be sn	ippea on 3/23.
· · · · · · · · · · · · · · · · · · ·					,	_	
11/30 - Identified an additional ret	nining venil 4	that is halow are de	and door not show on the	Mill execute to de	tormino dimo:	nsions	
Demo Plan.	anniy Walii	triat is below grade	and does not snow on the	Tanii excavate to de	reminis annel	11310113.	
12/15 - Excavated to locate the 46 didn't find them. Will try again. A	ctual deoth	will be much deepe		Sent e-mail to Rog	er F.		
Note: Cold trap test results: 0400		****	1200 hours =<2				1
	-	, , , , , , , , , , , , , , , , , , , ,					
EQUIPMENT (working, de	elivered,	idle):					
CVE fab crew: Portable toilet (3), txxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	forklift, 1 de Newman: ti	lumpster, office trail					
OSHA Recordable Safety	Incident	ts:		 	Reported	hv:	Time:
Contractor dable ballety	oidelli				. (Cported	-,	, <u>.</u>
							





March 14, 2012

Laboratory Code:

RES

Subcontract Number: Laboratory Report:

NA RES 231545-1

Project # / P.O. #

None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 231545-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-00-15

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 231545-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

March 13, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 14, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter
ID Number	IO Nu	mber	Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-031212 W	EM	872443	0.0800	965	ND	0.0050	BAS	BAS
3W-031212 N	EM	872444	0.0800	968	ND	0.0050	BAS	BAS
3W-031212 E	EM	872445	0.0800	966	ND	0.0050	BAS	BAS
3W-031212 S	EM	872446	0.0800	966	1	0.0050	0.0050	12.5

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 231545-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

3rd West Sub - RMP

Client Project Description: Date Samples Received:

March 13, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 14, 2012

Client ID Number	Lab ID Ni	umber	Asbestos Mineral	Asl	bestos Str	ucture Typ	es*	Structures >5 Microns in Length	**Excluded Structures	Astrestos Structures for
			_	Fibers	Bundles	Clusters	Matrices			Concentration
3W-031212 W	ЕМ	872443	ND	0	0	0	0	0	0	0
3W-031212 N	EM	872444	ND	0	0	0	0	0	0	0
3W-031212 E	EM	872445	ND	0	0	0	0	0	0	0
3W-031212 S	EM	87 2 446	Trem-Act	1	0	0	0	0	0	1

^{*}See Analytical Procedure for definitions

^{**}C = Excluded from total due to lack of confirmation

^{**}L = Excluded from total for length less than 0.5 micron (AHERA only)

^{**}A = Excluded from total due to i ncorrect aspect ratio

ND = None Detected

Due Date: 3/4-12
Due Time: _____

REILAB RESERVIIFS ENVIRONMENTAL, INC. 8001 Logan St. Denver, CO 80216 • Ptr. 303 964-1986 • Fax 303-477-4278 • Toll Free :866 RESHEAV

J			
Page _	1	_ of _	

	Pager: 303-509 INVOICE TO: (IF			NT										cc	NTA	T IN	IFOR	MATIC	۱N:				
Company (Lell Environmental	Company:		<u> </u>	,		Con	act: (Jave	Q.	مذأو	οίξι				11112	<u>, , , , , , , , , , , , , , , , , , , </u>	Conta		<u></u>				٦
Address: 47 W 9000 5 #2	Address:					Pho		-		-21-	<u> </u>	·¥					Ptxon	10:					╡
Sandy W.84070						Fas				-							Fox						٦
						Cell	ager:	80 L	51	11-1	103	5					Cally	pagar.					\Box
Projeoj Number and/or P.O. #:							-1	Dallven															ı
Projuct Description/Location: 35 West Sub. RMP							<u>da</u>	ve C	<u> </u>	ren	יי ת	عن.د	<u>~~</u>										┙
ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm				S (1)	· * •	REQUI	ST	D A	NAL	YSI	S	187	ў ж		27.7	VA	LIDA	MATRI	CO	DES	LA	B NOTES:	٦
PLM / PCM (EM) RUSH (Same Day) K PRIORITY (Next Day)STANDARD									\top						Alr :				lk = B			٦
(Rush PCM = 2hr, TEM = 6hr.)		l		1 1	-	1										Dust	= D		Pa	int = P	L		
CHEMISTRY LABORATORY HOURS: Weekdays: 8am - 5pm]		1 1	ļ	.		-				11				Soll	- \$		Wir	e = W			┙
Metal(s) / Dust RUSH 24 hr 3-5 Day	**Polon matification to	ſİ	턴	1 1	- !				١.								≃ SW			Food	<u> </u>		_
RCRA 8 / Metals & Welding RUSH 5 day 10 day	**Prior notification is required for RUSH	盲	Quant			Scan	- 1		1.3	300			<u>ē</u> .	_	Drinki	ng W				Vater ≃ WW			4
rulle ovally toler	tumarounds.**	Point Count	+ ge		l			11	ģ		li		2	ដ	L.,,			0 = Othe					4
Organics 24 hr 3 day 5 Day		ই	150 E	{ }		eta Para	- }	- 1-1			<u>ē</u>	5	Sec.	Ž	- AS	IME	1/92 8	pproved	wibe it	nedia only**			4
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pr E.coli O157:H7, Coliforms, S.aureus 24 hr 2 Day	n 3-5 Dav	report.	4 E	1		Analyte(s)_ CLP, Welding Fuma, Metals	ļ	11	18	탈	2 ∶		ion. Our	Ē	 				I				\dashv
E.coli O157:H7, Coliforms, S.aureus24 hr2 Day Salmonella, Listeria, E.coli, APC, Y & M48 Hr3-5 Day		<u> </u>	돌	OSHA	و ا	1 2				÷ ₽	Les .		S S	5				l			<u> </u>		\dashv
	_48 Hr3 Day5 Day	8	흔진	8	Ę	dig.		+	1	Quan	b i	الإا	12 3	5					-				ᅥ
"Turnsround times establish a laboratory priority, aubject to laboratory volume and s		ng port	Level 7-vac	7400B,	Respirable	¥ Šę	Ŧ	÷ 🛱		ا⊾ٍ 3		5 O	Identificati	₫	۱.	1			1				┪
apply for afterhours, weekends and holldays.**			≵ં≨			- Anal	.≌	57.t	* }	-/- c	[[+		Ē	5	١	يع أ		İ		4172		٦
Special Instructions:	<u> </u>	Short	AHERA Jant Mis	7409A,	Total,	١٢	8	Salmonella: +/- E.coli O157:H7:	뵬	Ecol: +/- c	Californs:	W.	+	ž .	۾ ڳا	٤	ig ig	_	1		EM Nu	mber (Laborate	ory
	. •	1 • 1	· 🕏		Ë.	METALS RCRA 8,	ORGANICS - METH	를 입 등 B	Listeria	E colt	[흥]	Y&M: +	Š	Ę	Sample Volume	Matrix	# Containers	Dat Collec		Time Collected		Use Only)	
Client sample ID number (Sample ID's must be unique		돌	S E	ž	DUST		ĕ		MICE	КОВК				<u> </u>	8 3		#	mm/do		hh/mm a/p_	1 1 1 4		
1 3W-031212W			X	1 1				71					П		965	: A	-	3/12/	12		1 ET	2443	- [
2 34 031212N							20 ° 1								963							संस	
3 3W -031 UZ E			\perp									Ш			966	Щ						45	╛
4 Paw 031212 S			↓ ·												966	, 1	4	↓			-₩	46	
5																							
6																							
7																	\perp				<u></u>		_
8 / 11 / 11 / 12 / 12 / 12 / 12 / 12 / 1														2			9	9.7%					
9		IJ												_		_{							
10			1.4.		1		7					Mail		<u> </u>			1. 2	- ""		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			П
Number of samples received: (Addition	onal samples shall be listed on	attac	hed lo	ona fo	m.)		_		- 1	-1:-	LL	اختاب				41. 7	<u>.:۱</u>	<u> </u>	نا حيث		·		
NOTE: REI will analyze incoming samples based-upce-information received and will not be analysis as indicated on this Chain of Custody shall constitute an analytical services agreem	reeponsible for errors or omissions in c	alcutat	ions res	sulting fi	rom ti	hs inacçı	recy o	forigina av resu	al det	a. By a	mon!	dleni	l/oomp	oany rsi urcharo	oresenta O.	ive ag	rees th	al submiss	ion of t	the following sa	mplas for re	quested	
	610											,		_									٦
Relinquished By:	red Ex			Date	e/Tin	ne: 🗓	ell i	<u> 4117</u>	_						_			dition:			Sealed	Intact	١
Laboratory Use Only Received By:	te/Time: 3012	a ·	<u></u>		_	Carrie	. =	10	-4	_	_				T	emp.	(F°)		_ Ye	s/No Y	es / NoĆ	Yes No	١
	14 12 Time 4'15 5calniti		74 C	ontact		Janie	_	Phone	E	nail)	Fax				Oate			· · · ·	Time		Initia	als	٦
Contacl Phone Email Fax Data	Tima Initi	_	7	ontact				Phone	_	\smile		<u> </u>			Date				Time		Initia		٦
		_							=					_				-					_

7-2011_version 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type A = Amosite An = Anthophyllite C = Chrysotile Cr = Crocidolite Cr = Tremolite Structure Types F = Fiber B = Bundle C = Cluster M = Matrix

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

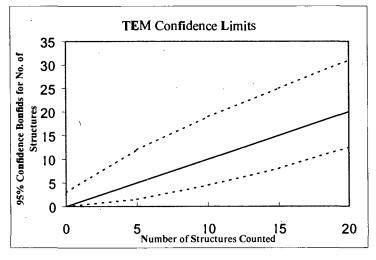
XGB = partly obscured by a grid bar

Sizing Conversion 1 length unit = 5 mm on screen = 0.278 micron 1.80 length units = 0.5 micron 18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI
Instrument	JEOL 100 CX/N S
Voltage (KV)	100 KV
Magnification	20KX) IOKX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mnı2)	385
Secondary Filter Area (mm2)	·
QA Type	

Client :	RHR
Samole Type (A=Air, D=Dust):	I_A_
Air volume (L) or dust area (cm2)	965
Date received by lab	3 13 12
Lab Job Numben	231545
Lab Sample Number;	872443

Analyzed by	JB
Analysis date	3/14/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	АH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):				
Fraction of primary filter used				
Total Resuspension Volume (ml)				
Volume Applisd to secondary filter (ml)				

Grid	Grid Opening	Stmcture	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = ye	es, bla⊓k	= no
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K4-6	ND									÷			
	44-6	ND			Pu	A	807	la cartrut		5-10	In de bre			
	614-6	DN			Pry	B	60	Lo in trust	, 	5-10	Codelins			
	F4-6	ND			1				1					
B	E4-4	ND						4	B	3/14	1/12			
	C4-4	ND							/	/ ',				
	B4-4	ND												
<u></u>	£3-1	_ √ D_									·			
								•						
													-	

Laboratory name:	REI
Instrument	JEOL 100 CX/N) S
Voltage (KV)	100 KV
Magnification	20KX) iOKX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RHR
Sample Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	968
Date received by lab	3 13 12
Lab Job Number:	231545
Lab Sample Number:	872444

Analyzed by	_JB
Analysis date	3/14/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D -
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary tater used						
Total Resuspension Volume (ml)						
Voluma Applied to secondary filter (ml)						

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				1 = ye	es, blank	= no_
0.10	Ond Opening	Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K2-3	ND					·					i		
	HZ-3	MD			P	is &	70	Lo inten	+	5-9	the debus	L		
	612-3	M			P.	w F	70	Le in har	<u>'</u>	5-7	% debno			
	F2-3	A/j>							r					
<u>B</u>	F4-1	10						1	3/1	1/12				
	E4-1	ND		· -				1	/	7				
	C4-1	ND												
	E3-4	ND			· 									
	-													

Page	1	οf	
, ugo	•	٠,	

Reservoirs Environm	ental, Inc.
TEM Asbestos Struct	ure Count

1	
Laboratory name:	REI
Instrument	JEOL 100 CX/N S
Voltage (KV)	100 KV
Magnification	20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Туре	

7 E 141 7 13 D C 31 O O C II U	Cture Count
Client :	RHR
Samole Type (A=Alr, D=Dust):	A
Air yolume (L) or dust area (cm2)	966
Date recaived by lab	3 13 12
Lab Job Number:	231545
Lab Sample Number:	872445

Analyzed by	J13
Analysis date	3/14/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preos	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width	i de i i i i i i i i i i i i i i i i i i	Amphibole	С	NAM	Sketcti/Comments	Sketch	Photo	EDS
1	H3-3	ND												
	63-3	MD			1	PS	413	~ 80% (x	Smit	-	5% Jelon			
	F3-3	ND				۲, ۰	1_/							
	E3-3	M					3/14	1/2						
B	H3-3	ND						1						
·	63-3	ND				/								
	F3-3	MD												_
	E3-3	ND												:
				:	-							 -		

Laboratory name:	REI
instroment	JEOL 100 CX/N S
Voltage (KV)	100 KV
Magnification	20KX) 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary fitter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	RHR
Samble Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	giala
Date received by lab	3/13/12
Lab Job Number:	231545
Lab Sample Nutnber:	872446

Analyzed by	JB
Analysis date	3/14/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = ye	s, blank	= no
0	J	Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K3-1	ND		<u> </u>					<u>.</u>					
	H3-1	ND				Prys.	\$ 80	5/2. n. hu	f	5-:	1/2 delors			
	63-1	ND		 		Pup	B 60	To contan	f .	5-7	Lo de lovs			
	F3-1	ND					-			٠ .				
B	H4-3	F		11	7	4	ADx_	TREMACT						
	64-3	ND					<u> </u>	,	1					
	F4-3	S						1	B 31	14/12				
<u> </u>	E4-3	DN						7	/	11/-				
					-									

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, s/cc = $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



March 15, 2012

Laboratory Code:

RES

Subcontract Number: Laboratory Report: NA RES 231640-1

Project # / P.O. #

None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AlHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 231640-1 Is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30 0018

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 231640-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

Marctt 14, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 14, 2012

Client	Lab	Lab		Air	Number of	Analytical	Asbestos	Filter
ID Number	ID Number		Analyzed Volume Sampled		Asbestos Structures Detected	Sensitivity	Concentration	Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-031312 W	EM	872644	0.0900	936	ND	0.0046	BAS	BAS
3W-031312 N	EM	87 264 5	0.0900	936	3	0.0046	0.0137	33.3
3W-031312 E	EM	87 2 646	0.0900	936	ND	0.0046	BAS	BAS
3W-031312 S	EM	87 264 7	0.0900	936	2	0.0046	0.0091	22.2

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE IL SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 231640-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

March 14, 2012

Analysis Type:

TEM, AHERA

Turnaround:

Date Samples Analyzed:

24 Hour March 14, 2012

Client ID Number	Lab ID No	umber	Asbestos Mineral					Structures >5 Microns	**Excluded Structures	Asbestos Structures	
				Asbestos Structure Types*				in Length		· for	
			-	Fibers	Bundles	Clusters	Matrices	,		Concentration	
3W-031312 W	EM	872644	ND	0	0	0	0	0		0	
3W-031312 N	EM	872645	Chrysotile	1	2	0	0	. 1	0	3	
3W-031312 E	EM	872646	ND	0	0	0	0	0	0	0	
3W-031312 S	EM	872647	Chrysotile	2	0	0	0	0	0	2	

^{*}See Analytical Procedure for definitions

^{**}C = Excluded from total due to lack of confirmation

^{**}L = Excluded from total for length less than 0.5 micron (AHERA only)

^{**}A = Excluded from total due to i ncorrect as pect ratio

ND = None Detected

Due	Date:	315	12_
Due	Time:	7	 57

Reservoirs Environmental, inc. 5801 Logen St Denver, CO 60216 - Ph: S03 864-1686 - Pax 300-477-4275 - Toll Free : 266 RESI-ENV

Pager : 303-589-209a INVOICE TO: (IF DIFFERENT) CONTACT INFORMATION: Contact Dave Roskeller 12 P Envormental Contoct: 47 W 98902 #2 Address: Phono: Phono: Sandy, Ut. 84070 Cell/pager: 801 5:41-1035 Coll/pager. mlect Number and/or P.O. #: roject Descripeon/Location: 3 West Sub -RMIP dove @ menino com ASBESTOS LABORATORY HOURS: Weekdays: 7am - 7pm REQUESTED ANALYSIS VALID MATRIX CODES LAB NOTES: RUSH (Same Day) PRIORITY (Next Day) STANDARD Air = A Bulk = B (Rush PCM = 2hr, TEM = 6hr.) Dust = D Paint = P CHEMISTRY LABORATORY HOURS: Weekdays: Sam - Spm Soil = S Wipe = W Metat(s) / Dust ___ RUSH ___ 24 hr. ___ 3-5 Day Swab = SW F = Food **Prior notification Is RCRA 8 / Metats & Welding Drinking Water = DW | Waste Water = WW __ RUSH ___ 5 day ___ 10 day Point Count required for RUSH Fume Scan / TCLP O = Other ISO, +/-, ect Preps tuniarounds,™ Organics 24 hr. ___ 3 day ___ 5 Day "ASTM E1792 approved wipo media only" MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - Spm E.coli 0157:H7, Coliforms, S.aureus 3-5 Day ____ 24 hr. ____2 Day Salmonella, Listeria, E.eoli, APC, Y & M 48 Hr. 3-5 Day Motd RUSH ___ 24 Hr __ 46 Hr __ 3 Day Turnaround timos establish a isboratory priority, subject to laboratory volume and are not guaranteed. Additional fees npply for afterhours, whokends and holidays." Special Instructions: EM Number (Laboratory Date Use Only) Collected Collected Client sample ID number (Sample ID's must be unique) mm/dd/yy hh/mm n/n 3W-031312W X 3113/12 892644 3W-031317 N 936 3W-031312 E 936 936 3W-031312 8 10 Number of samples received: (Additional samples stiall be listed on attached long tomi.) NOTE: REI will analyze incoming samples based upon miormation received and will not be responsible for enors or omissions in colculotions resulting from the inaccurecy of odginal data. By signing x jent company representative ogrees that submission of the following samples for requested analysis as indicated on this Chain of Custody shall complicate an analysical services ogreement with payment terms of NET 30 days, failure to comply with payment terms may result m a 1.5% monthly interest exercises. Relinguished By: Date/Time: Sample Condition: Intact Laboratory Use Only Temp. (F°) Yes / No Yss/No Yes / No Received By: Date/Time: Results: Contact Dance Date 3/14 (Phone Email Fax Time 2 4 Sp Initials AContact Phone Email Fax Oate Time Initials Contact Phone Email Fax Time Contact Phone Email Fax Date Time Initials

7-2011 version 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

A =	Amosite	F =	Fiber
An =	Anthophyllite	B =	Bundle
C =	Chrysotile	C =	Cluster
Cr =	Crocidolite	M =	Matrix
T =	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

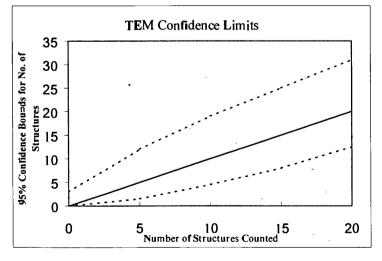
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	的是是不管的。 RELESSED
Instrument	JEOL 100 CX 11 S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.56 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Туре	中的心态的

温が出ばいる。
114424
中国人工
THE STATE OF
313,2644

F-Factor Calculation (Indirect Preps Only):									
Fraction of primary filter used	<u> </u>								
Total Resuspension Volume (ml)									
Volume Applied to secondary tilter (ml)									

Analyzed by	M
Analysis date	13/14/12
Method (D=Oirect, l=Indirect, IA=Indirect, ashed)	語りなっ
Counting rules (ISO, AHERA, ASTM)	ALL
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
		Туре	Primary	Total	Length	Width	·	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	K5-6	M												, ,
	H5-6	M			22	v A	90/2 (Wa	ct 5-7)	del	100				
	(15-6	in			ln	ese B	M:	,	3/17	1/2				
	P5-6	M				7	4							
	25-6	M												
3	K6-1	M												
	Ho-1	M												
	96-1	M												
	P6-1	M							·					

Laboratory name:	THE RESIDENCE
Instrument	JEOU 100 CX. N. S
Voltage (KV)	100 KV
Magnification	20KX) 10KX
Grid opening area (mm2)	25.0.0103
Scale: 1L=	0.28 um
Scale: 1D =	20.56 um 1
Primary litter area (mm2)	38510
Secondary Filter Area (mrn2)	Service State
QA Tyoe	

Client:	
Sample Type (A=Air, D=Dust):	
Air volume (L) or dust area (cm2)	HATTE
Date received by lab	经种种种
Lab Job Number:	
Lab Sampte Number:	16 H

Lab Sampte Number:	
F-Factor Calculation (Indirect P	reps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	all
Analysis date	3/14/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	がで D seve
Counting rules (ISO, AHERA, ASTM)	ALL
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	No. of Structures		nsions :	Identification	Mineral Class			j .	1 = yes, blank = no		
		Туре	Primary	Total	Length	Width	·	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	64-3	B			23	10	· cn							
		B		2	5	3	CV				1			
		P		3	2	١. ز	csb.		/					
	F4-3	M												
	24-3	M			Qn	r A	sch. 1	wers-7	Le	brs				
	. 4-3	NP									·			
	134-3	W											·	
B	64-6	W			·									
	FU-6	M					·							
·	9.416	M										7	1	

Page	Z_	αf	Z
- 494		٠.	

LAB NAME	REI	Lab Job Number:	231640	Analyzed by:	- CK
		Lab Sample Number	972645	Analysis Date:	3/14/12

Grid	Grid	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class			1 = y	es, blank	= no	
J2	Opening	Туре	Primary	Total	Length	Width	140114110411011	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
	04-6	(8)												
					·	Prier	B80C	(Minoi-	5-7	Toleb	3 James Agentin	3/14	(12	
				,										
							·				·			
				<u>-</u>		·								 <u></u>
		· · · · · · · · · · · · · · · · · · ·												
									,					<u> </u>
														

Laboratory name:	REISH
Instrument	JEOU 100 CX N S
∨oltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.56 um
Primary filter area (mm2)	1385 120 1966
Secondary Filter Area (mm2)	多种的
QA Tyoe	

和超过速的
地方的理
地域中外的
WE WIND
设加之区

F-Factor Calculation (Indirect Preps Only):					
Fraelion of primary filtsr used					
Total Resuspension Volume (ml)					
Votume Applied to secondary filter (ml)					

Analyzed by	M
Anatysis date	3/14/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	RAD:
Counting rules (ISO, AHERA, ASTM)	-A1
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grk! Opening	Structure	No. of St	nuctures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	Olki Opening	Туре	Primary	Total	Length	Width	idenalioation	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	64-6	M)			,							-		·
L	FUC	m			Q	nex l	857 1	via c4-5-7	7 de	bini				
	2116	MÓ		,		ner 1	Boyl.	riace 5-7	3/14	112				
	04-6	M							<u> </u>					
	3416	M		,										
3	H3-1	M										·		
	971	M												
	F3-1	M												
	9.3-1	M).												
													1	

Laboratory name:	RE STATE
Instrument	JEOU 100 CX N S
Voltage (KV)	100 KV
Magnification	(20KX) 10KX
Grid opening area (mm2)	0.0103
Scale: 1L =	0.28 um
Scale: 1D =	0.56 um
Primary filter area (mm2)	385 12 18 6
Secondary Filter Area (mm2)	
QA Type	全国の 大学 大学 大学 大学 大学 大学 大学 大

当時では記載
地區可認定的
學的學
WIND IN COMMENT
331226HA

Analyzed by	M
Analysis date	13/14/12
Method (D=Direct, I=Indirect, IA=Indirect ashed)	おわい
Counting rules (ISO, AHERA, ASTM)	2.4.L
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter	

Grid	Grid OpenIng	Strncture	No. of St	ructures	Dimer	nsions :	Identification	Mineral Class				1 = y	1 = yes, blank = no		
0.70	One opening	Туре	Primary	Total	Length	Width	lacitation	Amohiboie	С	NAM	Sketch/Comments	Sketch	Photo	EDS	
A	×5-3	W													
	H5:3	NO						•							
	ns=3	.W)		,											
·	F5-3	F		(2.5	2_	Cry .	•			1				
	95-3	M				lne	4 A 908	were 5	200	ebñ	.				
B	K6-4	F		2	3:5]	CO				/				
	1404	NO				Pn	y Baj	J. M.	7.5	2/1	4/12		•		
	96-4	M]-	,		1 1					·		
	P6-4.	M)							·						
												·	·		

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$

Concentration, $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



March 16, 2012

Laboratory Code:

RES

Subcontract Number: Laboratory Report:

NA RES 231728-1

Project # / P.O. #

None Given

Project Description:

3rd West Sub - RMP

David Roskelley R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 231728-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 231728-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

March 15, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 15, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter	
ID Number	ID Number		Analyzed Volume Sampled		Asbestos Structures Detected	Sensitivity	Concentration	Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-031412 W	EM	872786	0.1000	972	1	0.0040	0.0040	10.0	
3W-031412 N	EM .	872787	0.1000	972	ND	0.0040	BAS	BAS	
3W-031412 E	EM ·	872788	0.0400	972	6	0.0099	0.0594	150.0	
3W-031412 S	EM ·	872789	0.1000	986	· ND	0.0039	BAS	BAS	

NA = Not Analyzed

Filter Material = Mixed Cellulose Ester

ND = None Detected

Filter Diameter = 25 mm

BAS = Below Analytical Sensitivity

Effective Filter Area = 385 sq mm

Average Grid Opening in mm² = 0.010

DATA QA

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 231728-1

Çlient:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

March 15, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 15, 2012

Client ID Number	Lab ID No	umber	Asbestos Mineral	Asl	bestos Str	ucture Typ	es*	Structures >5 Microns in Length	**Excluded Structures	Asbestos Structures for		
			_	Fibers	Bundles	Clusters	Matrices			Concentration		
3W-031412 W	EM	872786	Chrysotile	1	0	0	0	0	0	1		
3W-031412 N	EM	872787	ND	. 0	0	0	0	0	0	0		
3W-031412 E	EM	872788	Chrysotile	6	- 1	0	0	. 1**A	0	7		
3W-031412 S	· EM	872789	ND	0	0	0	0	0	0	0		

^{*}See Analytical Procedure for definitions

^{**}C = Excluded from total due to lack of confirmation

^{**}L = Excluded from total for length less than 0.5 micron (AHERA only)

^{**}A = Excluded from total due to i ncorrect aspect ratio

ND = None Detected

Jo

RES 231728

Jo P

			INVOICE TO: (1)	F DIF	FERE	ENT)			_				_	_	C	ONTA	CT II	IFOR	MAT	TION:				
Company:	I Engineer mental		Company:							Day	e R	اري	elle					Conlact:						
Address: 4	7 W 98005 #Z	· · · · · · · · · · · · · · · · · · ·	Address:						one:									Phon	W:					
	ends Ut. 84070							Fau										Fax:						
								Cei	/pager	80	الجزا	<u> </u>	<u>(03</u>	<u> 5</u> _				Cell/p	ogar.					
Project De surp	randor P.O. 8: Bion/Location: 3th West Sub -	emp			Finel Data Delivariable Email Address: Oavil @ Menyiro.com																			
ASBEST	OS LABORATORY HOURS: Week	lavs: 7am - 7pm		T			R	REQU	EST	ED A	NAL	YSIS			. 1,1	1	·VA	LID N	ATE	XIX CC	OES	L	AB NOT	TES:
PLM / PCM (TEM) RUSH (Sams Day) PRIORITY (Next Day) STANDARD			+	T -	ŤΠ	П							П	\top	1	Air :		T		ık=B	1			
1	(Rush PCM = 2hr, TEM = 6hr.)			1		1 1		1	1	- [11	11	İ	.			Dust	=0		Pε	int = P			
CHEMIST	RY LABORATORY HOURS: Week	days: Sam - 5pm	vinta. Principality]	1	1 1	1	1	} }	- (1 1	1 1	1				Soll	= S		W	pe = W			
Metal(s) / E	DustRUSH_	24 hr3-5 Day		7	돧	1 1		-	1.1	-1.)	.]]	- []) }				= SW			= Food			
	fletals & Welding RUSH	S day10 day	■Prior notification is required for RiJSH	Į	Quant]]) ș			ję.		1]]	ē	Drinki	ng W				Vater = WW	ļ		
Fume Scar	17 ICLP		turnarounds.**	Point Count	Preps	1 1		32							NOTES	<u></u>			0=0		4	ļ		
Organics		_ 3 dayS Day		-1 ≨	S 5	1 [Metals Scan			Quantification	}	S 8		S S	-AS	TME	1792 a	pprove	odiw De	media only**	 		
	OLOGY LABORATORY HOURS: V 7:H7, Coliforms, S.aureus	24 hr,2 Day		불		10	1	,			8	Ş	or Quantification or Quantification	돌	OTHER S	l	}	1)		!		}		
		48 Hr3-5 Day	5-5 Day	Lang report	7402, SO-Ind	OSHA	اھ	Analyte(s)		-	≄	[월	real tra			}]]					 -	
Mold	, Listoria, Lison, Ar O, 1 a m		8 Hr3 Day5 Day	ΪĒ] ≈ ⁻	e i	8	₩ B		*	벌	Quantif	اعاد	en o	SOR	,						<u> </u>		
	d times astablish a laboratory priority, aubject			1 §	RA Level Micro-vac,	7400B,	22	¥ Xe	E	≯ ë	្រី	8	\$ \$	8		۰		ĺĺ						
	apply for afterhours,	veekends end holidays.**		Ιğ	≨ દુ	1	ផ្ល	TCP,	*	<u>2</u>	字層	4	! 1	¥ .	. E	Ę	وا	2						- 10 () () () () () () () () () (
Special Ins	structions:			Sed -	AHERA Jant, MK	7400A,	.0 1	, ≝	ORGANICS - METH	Salmonella: +/- E.cof O157:H7:	Listeria: +/- Aerobic Plate Count	E.coli: +	Coliforms: S.aureus:	Ξ,	- 182 - 183	Sample Volume	98	# Containers	_			EM No	mber ((t.aboratory
				1 .	1 . 5	1 ' 1	DUST.	METALS RCRA 8,	3	S D	₹	S S	ŠŠ	Y&M.	\$ E	Sample V	Matrix	통		ate ected	Time Collected		Use Only	y)
Client sa	mple ID (iumber (Sar	nple ID's must be unique)		3	Semi Semi	S.	3	불문	g		MICR	ОВЮ	LOOY	_	₹,			#		/dd/yy	hh/mm a/p			
1 3W	-031412W			1_	X						Ц	Ш		\perp		977		1	3(1	4112		81	27	£6
2 3w	031412N			L			_								<u>: </u>	977		\perp						\$7
3 3W	031412 E			J	<u> </u>							11				977	\prod						(X8_
4 3W	-031412 S				V									\prod		286	,],		,	,				89
5				Τ		\prod								T			T							
6									П	\top				T			7							
7				T^-								П		T			Т							
8						\Box								\top			7		-	•				
9												T	\Box	\top	<u> </u>	$\overline{}$								
10						1:1				1		11		\top			\top		-					-
Number of s	samples received:	(Additiona	I samples shall be liefed or	atta	hed lo	ng for	m.)		لمستا			11	لسلم	Ь		<u> </u>						L		لـــــــــــــــــــــــــــــــــــــ
NOTE: Ri analysis s	El will snalyze incoming samples bssittauperfinform is inclicated on this Chain of Cystody shall constitute	nation received and will not be reep en enalytical services agraement	Onsibte for errors or omissions in a with payment tenns of NET 30 de	alcuta ya, faik	llons rvsi ire to cor	ulting fr mpty wi	om (h ith pay	e inaccu mant le	nacy o	forlgin Sy 1880	al dala. It in a 1	. By #4	gning d nonlhly	iant/c intere	ompany re st surchart	presentaj je.	iva agr	ees tha	t subm	ission of	he following ex	mples for r	equested	
Relinquis	shed By: further your Use Only	Kazin	Fed Ex		_	Date	/Tim	e: 3	[14]	12						_	•	Conc			_	Sealed	Intag	-
Received By: Date/Time 75 12			9	20			Carrier		arrier.F.C.D.X					Te	mp.	p. (F°) Yes / No Y		es/No Yes/No						
Resulls:	Contact Phone Email	Fax Date	Time Init	ials		nlact					Emi					Oate				Time	•	· Init	als	
	Contact Phone Email	Fax Date	Time Infi	lals	lco	ntact				Phone	Emi	Ail F	ax			Dale				Time	•	Init	lals	- 1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

A = Amosite	F = Fiber
An = Anthophyllite	B = Bundle
C = Chrysotile	C = Cluster
Cr = Crocidolite	M = Matrix
T = Tremolite	

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

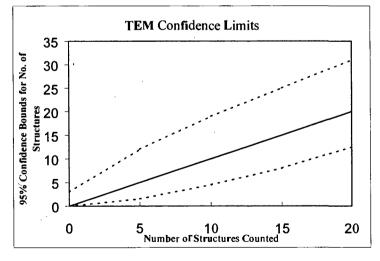
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

	Reservoirs
Laboratory name:	Environmental,Inc.
Instrument	JEOL 100 CX N
Voltage (KV)	loo KV
Magnification	20KX
Grid opening area	
(mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area	
(mm2)	385
Secondary Filter Area	
(mm2)	n/a
QA Tvoe	Not QA

Client:	R&R Environmental
Sample Tyoe (A=Air, © =Dust):	Α
Air volume (L) or dust area (cm2)	972
Date received by lab	03/15/2012
Lab Job Number:	231728
Lab Sample Number:	872786

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (mi)	

Analyzed by	n.zimbelman
Analysis date	03/15/2012
Method (D=Direct, I=Indirect,	
IA=Indirect, ashed)	D
Counting rules	
(ISO, AHERA, ASTM)	Ahera
Grid storage location	Montti Analyzed
Scope Alignment	Date Analyzed

Client Sample ID Number 3W-031412W

(0. S/MM)

	T				, ——		Г			19.	7 704 104			
Grid	Grid Opening	Structure	No. of Str	ructures	Dime	nsions	Identification	Mineral Class		_		1 = y	es, blank	= no
5.10	ond oponing	Туре	Primary	Total	Length	Width	10011110011	Amphibole	C NAM		Sitetch/Comments	Sketch	Photo	EDS
1	H2-1	41		,										
	42-6	K												
	K2-3	46												
	K3.6	كال												ı L
	K1-1	LL									(
	44-6	44				∦:	80/7	v-t-3-5	メ	かか				
B	H4. 6	MY						·		·				
	#4-1	418				0					1			
_	#3-6	لاب				\$:	90 23	寸. 5. 5 と	3:	しせい	\ \tag{\tag{\tag{\tag{\tag{\tag{\tag{			
	63-4	7		1	3/2	1	لاے		1		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			

Laboratory name:	Reservoirs Environmental,Inc.
Instrument	JEOL 100 CX N
Voltage (KV)	too KV
Magnification	20KX
Grid opening area (mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	n/a
QA Type	Not QA

R&R
Environmental
<u> </u>
972
00/45/0040
03/15/2012
231728
872787

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	`

Analyzed by	n,zimbelman
Analysis date	03/15/2012
Method (0 =Direct, l=Indirect, IA=Indirect, ashed)	D
Counting mles (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Client Sample ID Number 3W-031412N

Grid	Grid Opening	Structure	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class				- 1 = y	es, blank	= no
<u> </u>		Туре	Primaty	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
+	GLG	الملك												
	H4-1	SK												
	45-1	لمله												
	64-6	W)												
	F4.6	لكك												
	三人(1)	41				_	A- > 90	6 50%.	~5	7	رلسطية			
4	E1-6	M												
	至1-4	M												
	-1-4	NA.												
	44.1	الله					1: 280	that.	~5	ンし	abril			



Laboratory name:	Reservoirs Environmental, Inc.
Instrument	JEOL 100 CX N
Voltaae (KV)	100 KV
Magnification	20KX
Grid opening area (mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D=	0.056 um
Primary tilter area (mm2)	385
Secondary Filter Area (mm2)	n/a
QA Type	Not QA

	R&R
Client:	Environmental
Sample Type (A=Air, D=Dust):	Α
Air volume (L) or dust area	
(cm2)	972
Date received by lab	03/15/2012
Lab Job Number:	231728
Lab Sample Number:	872788

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used					
Total Resuspension Volume (ml)					
Volume Applied to secondary filter (ml)					

Analyzed by	n zimbelman
Analysis date	03/15/2012
Method (O=Direct, i=Indirect, tA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Client Sample ID Number: 3W-031412E

رد ک 03.16.14

										!	50. S/mm		·Olmm	4 4 4	774
Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions_	identification	Mineral Class				1 = y	es, blank	= no	
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS	
4	B3-1	Ŧ		71	7	١	<u>-)</u>		1		/4,	1			Ą
		B		٦	5	١	زع		1			(·] 3
		7		3	3/2	١	الت		V			1			
		F		Ą	2	١	E1		1		\	1			
B :	F }- 3	7		5	ょ	-	لات		8		/	-			
	毛とり	ध्य													
	83-3	Ŧ_		0	11/2		L 8		1		EXCL	1			
		Ŧ_		6	21/2	1	لات	·	V		4	1			
							2-2	- b~ A							

Laboratory name:	Reservoire Environmental,Inc.
Instrument	JEOL 100 CX N
Vottage (KV)	100 KV
Magnification	20KX
Grid opening area (mm2)	0.010
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	n/a
QA Type	Not QA

JEM Aspestos Structure Count					
	R&R				
Client:	Environmental				
Sample Type (A=Air, D=Dust):	A				
Air volume (L) or dust area					
(cm2)	986				
Date received by lab	03/15/2012				
Lab Job Number:	231728				
Lab Sample Number:	872789				

Fraction of primary filter used	İ	
Total Resuspension Volume (ml)		
Volume Applied to secondary filter		_

Analyzed by	n.zimbelman
Analysis date	03/15/2012
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	Ahera
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Client Sample ID Number 3W-031412S

Grid	Grid Opening	Strncture	No. of Str	uctures	Dimer	nsions	Identification	Mineral Class			1 = yes, blank = no			
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	B2-5	کالا									÷			
	王 } - [41								/ `_				
	F2-3	W												
	74-1	4			-	A: ~	60 /27	t-~3 < D).			
3	T-3-6	py					J			J				
	生(一)	. 41												
	E1-4	Al.												
-	11-4	H												
	64-1	الال												
	63-1	W				þ :	~ 75	Light. a	J B		a.			

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, $mm^2 = \# GO \text{ counted } x \text{ Average } GO \text{ Area } (mm)$

Concentration, s/cc = $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = #Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



March 19, 2012

Laboratory Code:

RES

Subcontract Number: Laboratory Report:

NA RES 231818-1

Project # / P.O. #
Project Description:

None Given

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 231818-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 231818-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

March 16, 2012

Analysis Type:

TEM, AHERA

Turnaround:

6 Hour

Date Samples Analyzed:

March 17, 2012

Client ID Number	Lab ID No	umber	Area Analyzed	Air Volume Sampled	Number of Asbestos Structures Detected	Analytical Sensitivity	Asbestos Concentration	Filter Loading
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)
3W-031512 W	EM	872918	0.1000	828	1	0.0046	0.0046	10.0
3W-031512 N	EM	872919	0.1000	826	ND	0.0047	BAS	BAS
3W-031512 E	EM	872920	0.1000	828	1	0.0046	0.0046	10.0
3W-031512 S	EM	872921	0.1000	828	ND	0.0046	BAS	BAS

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0015

TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 231818-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

March 16, 2012

Analysis Type:

TEM, AHERA

Turnaround:

6 Hour

Date Samples Analyzed:

March 17, 2012

Client	Lab		Asbestos					Structures	**Excluded	Asbestos
ID Number	nber ID Number Mineral			>5 Microns	Structures	Structures				
				Asl	bestos Str	ucture Typ	oes*	in Length		for
-			-	Fibers	Bundles	Clusters	Matrices			Concentration
3W-031512 W	EM	872918	Chrysotile	1	0	0	0	0	0	1
3W-031512 N	EM	872919	ND	0	0	0	0	.0	0	0
3W-031512 E	EM	872920	Chrysotile	. 0	0	0	1	0	0	1
3W-031512 S	EM	872921	ND	0	0	0	0	0	0	0

^{*}See Analytical Procedure for definitions

^{**}C = Excluded from total due to lack of confirmation

^{**}L = Excluded from total for length less than 0.5 micron (AHERA only)

^{**}A = Excluded from total due to i ncorrect aspect ratio

ND = None Detected

Due Date: 3-17-12 Due Time: 8:40

FIET LAB FIRSEINOIFS ENVIRONMENTAL, INC. 5801 Logan 81 Denver, CO 80216 - Ph: 303 994-1989 - Fax 303-477-4278 - Toll Free : 500 RESI-ENV

Job #_ Page

	Pagar : 303-509 INVOICE TO: (IF			NITS						•							- 1816	-00		ION:	. ugu	<u></u> `	<u> </u>	_
Company. Rel Enjoymenter	Company:	DIF	FERC	NI		Ico	nact:	'n.	4	7		- FI	_		CUI	VTAC.	_	Conte		iON:				
Address: 47 W 9000 #2	Address;						one:	100	a V-C	r	روب	kell	ly_					Pnone						
Sanda W. 8-1070					_	Fax									<u> </u>		-	Fax:						
20000 04. 04010		_				Cs	Vpago	x										Cell/p	ager:					
Project Number and/or P.O. #:								ta Deli										,						
Project Description/Location: 32 West Sub - RANP							Oa	ve	<u>@</u> ,	70	'nı	10	<u>ښ</u>	<u>~</u>										
ASBESTOS LABORATORY HOURS: Weekdgyp: 7 am - Tpm			196 L	7,5		REQU	EST	ΓED	AN	ALY	SIS			- 1°	×	(°	VAL	D M	ATR	IX CC	DES	LA	B NOTE	S:
PLM / PCM / TEM RUSH (Same Day) TRIORITY (Next Da))STANDARD	l		ļ		ł				11					ļ		\lr = .		\dashv		uk=B	ļ		
(Rush PCM = 2hr, TEM = Shr.)		l				1 1				$ \cdot $					-		ual =		\dashv		aint = P	 _		
CHEMISTRY LABORATORY HOURS: Weekdays: Samt - Spm		1			ł						- 1				ŀ		oil =		\dashv		ipe = W	 		
DODA G (Atakata & Maldina	**Prior notification Is]_	Quant							8	-		Ιİ		ŀ		ab =	_	- ·		= Food Water = WW	 -		
Fume Scan / TCLP RUSH 5 day 10 day	required for RUSH turnerounds.**	Į	ð			l g		Ш		8				9	ľ	- Printering	, vvai	_	Ow [\		AANIGI - AAAA	 		
Organics 24 hr 3 day 5 Day	tumarounus."	Point Count	Preps	1	1	Metals	Ì]]		ueméficat	- 1.	۔ ا ۔	1	OR OTHER NOTES	ŀ	"AST	M E1				media only**	 		iested latect resilvo
MICROBIOLOGY LABORATORY HOURS: Weekdays: 9am - 6pr	n de la companya de la companya de la companya de la companya de la companya de la companya de la companya de	۵	7402, ISO, SO-indired F		Ι.			П		ď	E	Quantification		E S	ľ									
Ecoll O157:H7, Coliforms, S.aureus24 lvr2 Day			7402, 50-ind	OSHA		- Analyta(s) TCLP, Welding Fume,	1	1	1	5	\$ S	or Quantifical	3	: E	Ì									
Salmonella, Listeria, E.coll, APC, Y & M 48 Hr3-5 Day		Long	=	1 -	景	l g	1			1	틞	3 8	ter i	ő	- 1							ļ		
	_48 Hr3 DayS Day	12	Level II, o-vac, IS	7400B,	Respirable	e(s)	r			튛		ชี ช	σį	2	- 1									
"Turneround tirnes saudblish a laboratory priority, aubject to labbratory volume and a apply for interhours, weekends and holidays."	ro not guarantaed. Additional faes	8	, E	7		af y	Ē	†	된	. 8	b :	†	٦	NITALS		<u>2</u>						-		
Special instructions:	<u> 737 (2011), 2743 (2014), 261 (27</u>	Ě	AHERA,	7400A.	· Total,	₹₽	8	Salmonella:	coli 0157:H7 steria: +/-	16	7	E S	: []	R'S		o No No No No No No No No No No No No No	Code	Containers		•	· '	- A A A	inha-a	
Special managheria		あ	A P			8 A.	¥	Ĕ	8 5	E G	E.coff:	SAUTOUR	20			Age 34	S S	Ē		ale	Time		INDER (La Uso Only)	
Client sample ID number (Sample ID's must be linkule		퉃	TEM - AHE Semi-quant,	Ğ.	PUST	METALS RCRA 8,	ORGANICS - METH	S I	<u>د ر به</u> الا	U.S.I CRO		ارم OGY	, > -	₹.	- {	Sample Volume (L) / Area	Matrix	<u>ق</u> ا		ected	hn/mm a/p	10.00		
1 3W-031512W		Ī	X	-			Ť		T		T	T		-	寸	828	Ā	_	3/15			800	791	10
2 380-03151EN 3W-03151LN																846	T			7.5			/	9
3 3W-031512F								\prod				T			T	828							à	Ó
4 3W-0315125												7				828	-	2.5		<u>.</u> ا			2	1
5										П			П		\top									
6 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -		70	4.4				5.0	\Box			- 11			e - ;; ;			À, A	1.5	110					
7														1										
8				į.				- 5			2. î						# (.) 1	4 1						
9					Γ_																			
10				S .								- 1							$\overline{\lambda_{ij}}$		4.77	1. 1.		
Number of samples received: (Addition	onal samples shall be listed on	atta	ched lo	ong fo	om.	.)		<u> </u>	1;6		<u>. 13</u>	-:1:	·	<u> </u>			لسننية				<u> </u>		····	-
NOTE: REI will analyze incoming samples based Open information received and will not be analysis as indicated on this Chain of Custody shell constitute an applytical services agreem																santativ	a agre	es tha	t submi	ssion of	the following s	mplas for re	quested	
	71						<u>.1.</u>	1																
Relinquished By: (Laboratory Use Only Control of Contro	ted Fx. te/Time: 3-1/0-12	_	8:4			ime:		<u> 5117</u>			<u> </u>						-	Cond	dition;			Sealed 'es / No	- Z \	
Received By: Da Phone Email Fax Deta 3		_		_	_	Carrie		Pho	ne.		ĮŽ	7				Date	_			Tim	IA	Initi	als.	
Contact Phone Email Fax Date	Time Initi		_	ontac			_	_	ne		_	_	_			Date				Tim		Initi		
			12.				_																	

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type A = Amosite An = Anthophyllite C = Chrysotile Cr = Crocidolite T = Tremolite Structure Types F = Fiber B = Bundle C = Cluster M = Matrix

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

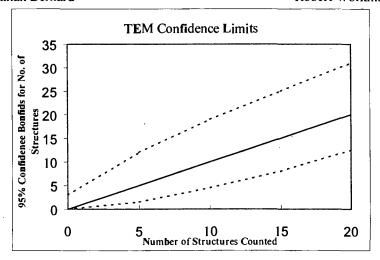
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI
Instrument	JEOL 100 CX N SQ
Voltage (KV)	_100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Client :	2+R
Sample Tyoe (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	828
Date received by lab	3/16/12
Lab Job Number	23(818
Lab Sample Number	872918

Analyzed by	- SX
Analysis date.	3/16/12
Method (D=Dlrect, l=Indirect, IA=Indirect, astred)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):							
Fraction of primary filter used							
Total Resuspension Volumo (ml)							
Volume Applied to secondary filter (ml)							

Grid	Grid Opening	Structure	No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	Grid Opening	Туре	Prlmary	Total	Lenath	Width	·	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
9	H4-3	ND						·						
	94-3	M				Pre	r A dex	macs 51	des	ء ۲۸ ح				
	PU3	M				Pn	on BM	Lords	3 - ي	1161	12_			
	04-3	M												
	24-3	M		·										
3	4-3	F		1.	7	1	csp		_		20			
	K4/3	M												
	1413	M												
	94-3	M												
	F4-3	M						·						-

Laboratory name:	REI
Instrument	JEOL 100 CX N SO
Vollage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.26 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

R+R
A
826
3/16/12
23/818
972919

Analyzed by	COX-
Analysis data	3/16/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyze
Scope Alignment	Date Analyze

F-Factor Calculation (Indirect Pre	ps Only):
Fraction of primary filter used	:
Total Resuspsnsjon Volume (mi)	
Volume Applied to secondary filter	

Grid	Grid Opening	Structure	No, of Structures		Dimensions		Identification	Mineral Class				1 = ves, blank = no		= no
Çili .	Cita Opening	Туре	Primary	Toigl	Length	Width	Agontinous on	Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
9	(45-)	M				,								
	F5-1	M			Pr	es b	85% 1	South	deb	13				
	45-1	M			P	rey 1	3~A.	Smille	3/	16/12		ļ 		
	c5-1	M								,				
	C5-3	M		•										
B	F3-6	MD										·		
	231	M												
	c3-6	M												
	33-6	M						•						
	A3-6	M												

	T
Laboratory name:	REI
Instrument	JEOL 100 CX N SQ
Voltage (KV)	100 KV
Magnification	20KX 10KX
Grid opening area	
(mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area	385
(mm2) Secondary Filter Area	305
(mm2)	
QA Type	

2+0
<u> </u>
A
828
3/16/12
231818
872920

Analyzed by	- ON-
Analysis date	3/16/12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	D
Counting mies (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preos Only):

Fraction of primary filter used	
Total Resuspension Volume (mi)	1.
Volume Applied to secondary filter (mil)	

Grid	Grid Grid Opening		No. of St	ructures	Dimer	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	One oponing	Туре	Primary	Total	Length	Width		Amohiboie	С	NAM	Sketch/Comments	Sketch	Photo	EDS
9	K4-4	M								•				·
	H4-4	M				Pres	A 907	Macs 5	7 d	esin				,
	GU-4	M				One	p B 509	Mucs 5	· Je	brs	South	3/16	112	
	FUY	2				_					U pu			
	EU-4	M												
B	FU-1	M								,				
	841	MD												
	C4-1	M									·			
	13-4	M		1	2	(CP				-			
	B3-4	M								٠				

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification_	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	·
QA Type	

Client:	R+R
Sample Tyoe (A=Air, D=Dust):	A
Air yolume (L) or dust area (cm2)	828
Date received by lab_	3/16/12
Lab Job Number:	23/818
Lab Sample Number:	972921
	1 - 1

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	COK-
Analysis date	3/16/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	P
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of Structures		Dimensions		Identification	Mineral Class				1 = yes, blank = no		
		Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
9	H3-6	W												
	636	M			6	ner	1807 m	tact 52 d	lebb	د				
	F3-6	MD				Pro	D 30%	intent 5	2 L	bur	July	3/10	102	
	€36	M												
	13-6	w												
B	94-1	M												
	F4-1	M												
	EU-1.	NO								,				
	F4-3	M											·	
	EM-3	100												

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, s/cc = $\frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff Filter Area (min}^2)}{\text{A verage GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



March 20, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report: Project # / P.O. #

RES 231934-1 None Given

Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. Is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 231934-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101899-0; TDH: #30-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 231934-1

Client:

Client Project Number / P.O.:

R & R Environmental None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

Analysis Type:

March 19, 2012

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 20, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter	
ID Number	ID Nu	ID Number Analyze		Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-031612 N	EM	873119	0.0900	909	ND	0.0047	BAS	BAS	
3W-031612 E	EM	873120	0.0900	911	ND	0.0047	BAS	BAS	
3W-031612 W	EM	873121	0.0900	909	ND	0.0047	BAS	BAS	
3W-031612 S	EM	873122	0.0900	909	ND	0.0047	BAS	BAS	

NA = Not Analyzed

ND = None Detected

BAS = Below Analytical Sensitivity

Average Grid Opening in mm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

Due Date: 3-70-12

Due Time: 955

RESERVOITS ENVIRONMENTAL, INC.. 5801 Lagen St. Denver, CO 80216 · Ph: 303 934 1989 · Fex 303-477-4279 · Toll Free :886 RESI-ENV

gan St. Denver, CO 80216 • Ph: 303 954-1586 • Fex 303-477-4279 • Toll Free :888 RESI-ENV Page 1 of ______

	INVOICE TO: (IF	DIFFE	RENT	'}								ONTAC	T INF	ORMA	TION:			
company: Rep Environmental	Compuny:					Contact: Dure Roske le Confect:												
Address: 47 W 90005 #2	Addrass:				Prw	Priene: Ptione;												
Sundy UL. 84070						Fnc Fax:												
						C48/pager: 80 (SU(-W35					C	el/pager.	:					
Preject Number and/or P O. #:					Fin	l Dala Os	diverable	la Email	Addres	\$8:								
Project Description Loceson: 300 West Sub-RMP																		
ASBESTOS LABORATORY HOURS: Weekdays: 7am - Tpm					REQUI	STEC	AN/	ALYS	IS		1.11		VALI) MAT	RIX CC	DDES	L/	AB NOTES:
PLM / PCM / (TEM) RUSH (Same Day) M PRIORITY (Next Day)STANDARD										1 1		Air = A		В	lulk = B		
(Rush PCM = 2hr, TEM = 6hr.)		1										<u> </u>	ust = [aint = P	-9	<i></i>
CHEMISTRY LABORATORY HOURS: Weekdays: 5am - 5pm]				1	i I		11				ioil = S	$\overline{}$		ipe = W	<u> </u>	32012
Metal(*) / Oust RUSH 24 hr3-5 Day	**Prior notification la	Í [;	[]					اءا				-	ab = S			= Food	$ldsymbol{\sqcup}$	
RCRA 8 / Metals & Welding RUSH 5 day10 day	required for RUSH	County Option		1	<u>F</u>			윑	11		Quantification ER NOTES	Drinking	Water		Waste Water = WW		<u> </u>	
Fulle Scall / ICCF	turnarounda.**	[อู้ ≰	: <u>8</u>		\\\S_2\\\			쵤		1		- <u></u>	O = Other **ASTM E1792 approved wipe media only**					
Organics24 hr 3 day5 Day		\ <u>\alpha</u> \bar{\bar{\bar{\bar{\bar{\bar{\bar{\bar	, g		Metals Scan	- 1	1	3	اقِ ا	5		- ASI	M E1/9	Z appro	ABG Mibe	media only"	├──	
MICROBIOLOGY LABORATORY HOURS: Weekdays: Sam - 8pn E.coll 0157:H7, Conforms, S.aureus24 nr2 Day		report. Point Count	. 🛱 📗	1 1	9	- []	11	8 8	8,		三	1		İ				
Salmonella, Listeria, E.coli, APC, Y & M48 Hr3-5 Day		<u>ē</u> ≨	SO-IN OSHA	ایا	E			Onamifica	Otrantifi	Quantification	g o	}	i I			ı	 	
	48 Hr3 Day5 Day	5 2 E		Respirable	\ <u>\</u> \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		4	빝		12	LS Of	1		-				
**Turnaround tines salahilah a jaboratory priority, Subject to laboratory volums and at			₹ 5	1 👸	Velt	₽ ¦	<u>.</u>	3 8	1 1	5 8	PE SE	١.			İ		 	
apply for afforhours, weekanda and holidays.**	a lior Acetelitead' Vocitioliel 1949				8 9	<u>.</u>	돌누		. 1	دا+	·E	ĮĔ		90	,	1		
Special Instructions:	<u></u>	Short report, AHERA, Lei	7400A.	Total,	15	Sakics - Mi Salmonella:	E.coli 0157:H7: Listeria: +/-	Aerobic Plate Count	Coliforms:	S.aureus: Y & M: +/	¥ 82	ھ ≷ ا	8	<u>jë</u>		}	EM N.	Imber (Laboratory
	•	1 - 1 -	추 '		ALS A 8,	A E	S sta	8 8	튛	2 2	PLE	8 8	, پ	를 다	Date	Tiine		Use Only)
Client sample ID number (Sample ID's must be unique	V . 1	골	Sean.	DUST	METALS - Analyta(s) RCRA 8, TCLP, Welding Fume,	ORGANICS - METH		CROB			<u>- 18</u>	Sample Volume (L) / Area	Matrix		n/dd/yy	Collected		
1 3W-031612M			<u> </u>	Ī		Ť						909			18/12		8	3/19
2 3W-03/67 E	A SECTION OF THE SECTION	ΙÓ				:	:			1		911			1			20
3 3W-03162 W								П	\prod			904						21
4 3W-03(412.5			/									909			\downarrow			22
5														7				
6								\sqcap	11	1				 - 			: 1 .1	· · ini
7	·····					$\exists \exists$		T	\Box	Ţ-		 		1-				
8								\sqcap	\Box					1		H 1 1 1		
9			1					П	П					1				
10				1.			-							1.				
Number of samples received: (Addition	nal samples shall be listed on	attactie	d long f	orm.)														
NOTE: REt will analyze knoming samples based upon information received and will not be re analysis as indicated on this Chain of Custody shall constitute an analytical services agreeme													agraas	that aubr	njssion of f	the following sen	aples for re	quaetad
Relinquished By: hyte	Fed Ex		Da	te/Tim	ne: 3	1611	2					5an	nple Co	ondition	n: C	On Ice S	ealed	Intact \
Laboratory Use Only	e/rimg: 3-19-17	95			Camer:		./	21	,)			s / No	Yes Mig
Results: Contact Phone Email Fax Date	Time Initia	als	Contac			<u> </u>	المرزات	maih	Fax			Date	2cz	(2	Tim	01/34	tnlii	als
Contact Phone Email Fax Date	Time Initis	ale	Contac	·+		Ph	- C	mali	Fay			Oate			Time		lolti-	ale

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	F =	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	$\mathbf{C} :=$	Cluster
Cr	=	Crocidolite	M =	Matrix
T	=	Tremolite		

ND = no structures detected

M = other structure associated with a matrix

NAM = Non Asbestos Mineral

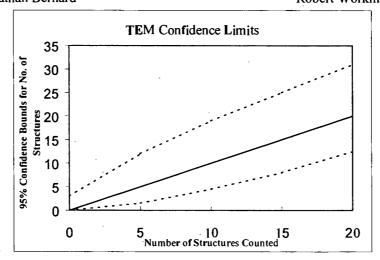
XGB = partly obscured by a grid bar

Sizing Conversion
1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory (tame:	REI
Instrument	JEOL 100 CX N (\$)
Voltage (KV)	100 KV
Magnification	i@xx lokx
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (rrm2)	
QA Typa	

Client :	R+R
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	909
Date received by lab	3-19-12
Lab Job Number:	231934
Lab Sample Number:	873119

F-Factor Calculation (Indirect Pr	eps Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	AH
Analysis date	3-20-12
Method (D=Oirect, I=Indirect, IA=Indirect, ashed)	O.
Counting rules (ISO, AHERA, ASTM)	Alberta
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Data Ot JB 3/20/12

Grid	Grid Opening	Structure	No. of St	ructures	Dime	nsions	Identification	Mineral Class	Mineral Class			1 = yes, blank = no		
Gild	Grid Opening	Туро	Primary	Total	Length	Width	Identification	Amphibole	D	NAM	Sketch/Comments	Sketch	Photo	EDS
A	64-6	M							11					
	F4-6	2												
	E46	9												
	65-	2		R	nA:	lev?	ntact	5	6.0	leb.	<i>(</i> 2)			
	F5-1	Δ		Per	, B-	Pie	in tact							
B	65-1	M		•			,							
	FS-1	M								17				
	ESI	NV												
	CS-	ND		,			•	/		`				

Laboratory name:	REI
Instrument	JEOL 100 CX N (\$)
Voitage (KV)	100 KV
Magnification	
Grld opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mrn2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	RAR
Sample Type (A≃Air, D≃Dust):	A
Air yoluine (L) or dust area (cn2)	911
Date received by lab	3-19-12
Lab Job Number:	231934
Lab Sample Numbar.	873120

F-Factor Calculation (Indirect Prepare	Only):
Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary fitter (ml)	

Analyzed by	. AH
Analysis date	3-20-12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	0
Counting rules (ISO, AHERA, ASTM)	Ahora
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stmcture	No. of St	ructures	Dimer	nsions	dentification	Mineral Class	iass			1 = yes, blank = no		
	Ora Opening	Туре	Primary	Totai	Length	Wkith		Amohibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	64-6	24							,					
	F4-6	2						1						
	E46	2			Piec	A: '	7090	tced	5-	7%	lebrs			
	C4-6	2				13: l	109-ir	taer	5-7	9.1	c.brs			
•	B4-6	ND							,					
ß	6524	20						,		-/				
	F5-4	ND								J				
	ES-4	M					,		/	7				
	15-4	(ND)												
						,				 				

Laboratory name:	REf
Instrument	JEOL 100 CX N S
Voltaae (KV)	100 KV
Maanification	LOKX 10KX
Grid opening area (mm2)	0.01
Scale: 1L =	0.28 um
Scale: 1D =	0.056 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Type	

Cflenf:	R+R
Samole Type (A=Alr, D=Dust):	_ A
Air yolume (L) or dust area (cm2)	909
Date received by lab	3-19-12
Lab Job Number:	231934
Lab Sample Number:	873121

Fraction of primary filter used	
Total Resuspension Volume (ml)	
Volume Applied to secondary filter (ml)	

Analyzed by	AH.
Analysis date	3-20-12
Method (O=Direct, I=Indirect, IA=Indirect, ashed)	0
Counting mies 0SO, AHERA, ASTM)	Aliora
Grtd storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Structure	No. of St	ructures .	Dimer	nsions	Identification }	Mineral Class				1 = y	es, blank	= no
Gild	Grid Opening	Туре	Primary	Total	Length	Width		Amohibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	F4-6	NV		·					,					
	E46	$\wedge \circ$						•						
324	2 (34-6)	MD		Pier	t; 8	09	ntad	5-780	lebi)				
	F3-3	ND		Piec	Br.	90%	intack	5-7%	da	625				
	E3-3	2			,									
B	F4-4	ND												
	E44	1						Q	.,					
	C4-4	ND					,	1/X						
	B44	an						9						
								/						

Laboratory name:	REI
Instrument	JEOL 100 CX N S
Voltage (KV)	100 KV
Magnification	20BX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.058 um
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Туре	<u> </u>

Client :	R42
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	909
Date received by lab	3-19-12
Lab Job Number:	231934
Lab Sample Number:	873122

F-Factor Calculation (Indirect Prep	s Only):
Fraction of primary fillsr used	
Total Resuspension Volume (ml)	
Voluma Applied to secondary fitter (ml)	······································

Analyzed by	AH
Analysis date	3-20-12
Method (D=Direct, l=Indirect, IA=Indirect, ashed)	0
Counting rules (ISO, AHERA, ASTM)	Ahoren
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed

Grid	Grid Opening	Stmcture	No. of St	ructures	Dime	nślons	Identification	Mineral Class	neral Class			1 = yes, blank = n		
Ond	Grid Opening	Туре	Primary	Total	Length	Width		Amphibole	С	NAM	Sketch/Comments	Sketch	Photo	EDS
A	H5-1	MD						•						
	G5-1	M		,		•								
	F5-1	2		P	ect:	90	vintac	x 5-7	Le	625			,	
	E5-1	$\wedge \wedge$		Pie	nB:		intac		0 0	605				
	C5-1	MD												
B	1443	ND												
	H4-3	M		•		/	X							
	64-3	ND				. /	<u> </u>							
	f4-3	ND				/			-					

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement,

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, $s/cc = \frac{\# \text{ Asbestos Structures}}{\# \text{ GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{\text{Eff. Filter Area (mm}^2)}{\text{Average GO area (mm}^2)} \times \frac{1L}{1000cc}$

Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

GO = TEM grid opening



March 20, 2012

Laboratory Code:

RES

Subcontract Number:

NA

Laboratory Report:

RES 231937-1 None Given

Project # / P.O. #
Project Description:

3rd West Sub - RMP

Eldon Romney R & R Environmental 47 West 9000 South #2 Sandy UT 84070

Dear Customer,

Reservoirs Environmental, Inc. is an analytical laboratory accredited for the analysis of Industrial Hygiene and Environmental matrices by the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 101896-0 for Transmission Electron Microscopy (TEM) and Polarized Light Microscopy (PLM) analysis and the American Industrial Hygiene Association (AIHA), Lab ID 101533 - Accreditation Certificate #480 for Phase Contrast Microscopy (PCM) analysis. This laboratory is currently proficient in both Proficiency Testing and PAT programs respectively.

Reservoirs Environmental, Inc. has analyzed the following samples for asbestos content as per your request. The analysis has been completed in general accordance with the appropriate methodology as stated in the attached analysis table. The results have been submitted to your office.

RES 231937-1 is the job number assigned to this study. This report is considered highly confidential and the sole property of the customer. Reservoirs Environmental, Inc. will not discuss any part of this study with personnel other than those of the client. The results described in this report only apply to the samples analyzed. This report must not be used to claim endorsement of products or analytical results by NVLAP or any agency of the U.S. Government. This report shall not be reproduced except in full, without written approval from Reservoirs Environmental, Inc. Samples will be disposed of after sixty days unless longer storage is requested. If you have any questions about this report, please feel free to call 303-964-1986.

Sincerely,

Jeanne Spencer Orr

President

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: 030-0015

TABLE I. TEM AIR FILTER SAMPLE DATA AND ANALYTICAL RESULTS

RES Job Number:

RES 231937-1

Client:

Client Project Number / P.O.:

R & R Environmental None Given

Client Project Description:

3rd West Sub - RMP

Date Samples Received:

March 19, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 20, 2012

Client	Lab		Area	Air	Number of	Analytical	Asbestos	Filter	
ID Number	ID Number		Analyzed	Volume Sampled	Asbestos Structures Detected	Sensitivity	Concentration	Loading	
			(mm²)	(L)		(s/cc)	(s/cc)	(s/mm²)	
3W-031712 W	EM	873123	0.1000	671	ND	0.0057	BAS	BAS	
3W-031712 N	EM	873124	0.1000	66 9	ND	0.0058	BAS	BAS	
3W-031712 E	EM	873125	0.1000	671	ND	0.0057	BAS	BAS	
3W_031712 S	FM	873126	0.1000	669	2	0.0058	0.0115	20.0	

NA = Not Analyzed

ND = None Detected BAS = Below Analytical Sensitivity

Average Grid Opening in rnm² = 0.010

Filter Material = Mixed Cellulose Ester

Filter Diameter = 25 mm

Effective Filter Area = 385 sq mm

DATA QA

RESERVOIRS ENVIRONMENTAL, INC.

NVLAP Lab Code 101896-0; TDH: #30-0016

TABLE II. SUMMARY OF ANALYTICAL DATA

RES Job Number:

RES 231937-1

Client:

R & R Environmental

Client Project Number / P.O.:

None Given

Client Project Description: Date Samples Received:

3rd West Sub - RMP

March 19, 2012

Analysis Type:

TEM, AHERA

Turnaround:

24 Hour

Date Samples Analyzed:

March 20, 2012

Client ID Number	Lab ID No	umber	Asbestos Mineral						Structures >5 Microns	**Excluded Structures	Asbestos Structures
				Ast	bestos Str	ucture Typ	es*		in Length		for
			_	Fibers	Bundles	Clusters	Matrice	es			Concentration
3W-031712 W	EM	873123	ND	0	0	. 0		0	0	0	0
3W-031712 N	EM	873124	ND	0	0	0		0	0	0	0
3W-031712 E	EM	873125	ND	0	0	0	1	0	0	0	0
3W-031712 S	FM	873126	Chrysotile	2	a	0		O	0	0	2

^{*}See Analytical Procedure for definitions

^{**}C = Excluded from total due to lack of confinnation

^{**}L = Excluded from total for length less than 0.5 micron (AHERA only)

^{**}A = Excluded from total due to i ncorrect as pect ratio

ND = None Detected

Due Date:_	93-10-17
Due Time:	955

Reservoirs Environmental, inc.

	•		-	9881 LogeA GL Pilgei	O6nver, 0 : 303-50:			: 303 9	984-ti	848 • F	ex 303	- 4174	275 -	TOBE	100 :8	86 RE	SFENY							Page	_1	_ ot	
				INVOICE.	ro: (IF	DIF	FERE	NT)				~			, .		•	CON	TAC	T IN		MATI	ON:				
Company:	IR Gurron	mentel	Company:								Contact Daine Rushelly								Contact:								
Address:	47 W 9000	15 \$2	Adic	Address:			Phono:										Phone:										
	Sandy Uti					Fax:									_	Fex:											
										Cell/pager: 801 SLL (4035											Cell/p	Oer					
Project Number Project Gescrip	or and/or P.O.#:	West Sub-RAMP								Fh	wi Dai	a Deliv	arable	Email	Addre	18:											
ASBEST	OSLABORATO	RY HOURS: Weekdays: 7a	m - 7pm		<u> </u>		1,1		. : F	REQU	EST	ED A	NA	LYS	IS				:	VAL	ID M	ATR	X CC	OOES	\Box	AB NO	OTES:
PLM / PCN	A (TETA)	RUSH (Same Day) R PRIOR	RITY (Next Day)	_STANDARD							Π		П		П				- 1	Air =	Α		В	ulk = B			
	•	(Rusti PCM = 2hr, T	EM = 6(hr.) .]										ŀ	li		D	ust =	D	\perp	Р	aint = P	ب	<u> </u>	
CHEMIST	RY LABORATO	RY HOURS: Weekdays: 8	am - Spm		1 11	1		1							11	1				Soil =	S		W	ipe ≖ W	-	132	2012-
Metal(s) / I		RUSH 24 hr	3-5 Day			1 (÷.	1 1	1			ľ	11			1	ľ		Sw	ab =	SW	Л.	F	≖ Food	\rfloor		
RCRA 8/1	Metals & Welding	B11011 - 5 4		**Prior notification		=	Quant,							<u>Ş</u>	11	1	٠ اڃ	D	rinking) Wa	ter = C	w w	/aste	Water = WW		\mathcal{I}	
Futno Sca	n / TCLP	RUSH 5 day _	10 day	required for RUSH turnsrounds.**	ı	Sount		1 1		Scan	ĺ '						質に			0=0		= Oth	1er				
Organics		24 hr 3 day _	5 Day	(2.112.221144		Point	Preps	ļļ	ll	Metats				<u>ā</u>	اءا	ااء	NOTES		"AST	ME1	7 92 ap	provec	wipe	media only**			
MICROBI	OLOGY LABOR	ATORY HOURS: Weekday		raakiin ee la			8 <u>\$</u>							٥,	[읥]	죑 동	중품	Г							I		
E.coli O15	7:H7, Coliforms, 5	5.au rsus 24 hr.	2 Day	_3-5 Day		Long report	젊들	≨		yte(s) Welding Fume,					[[활]	# · §	8 E										
Salmonsil	a, Listeria, E.eoll,		3-5 Day			20	Level II, 7402, o-vec, ISO-lix	OSHA	용					7 1	läl.	3 2	ig K				li						
Mold			124 Hr48	Hr3 Day5	Day		動気	gi	援	° ₽		‡	11	割	8	~ [8]	1 2	- [1			ĺ			
**Turnarour	nd times establish a la	iboratory piterity, subject to laborate apply for starbours, weekends a		ot guaranteed. Additi	onal fees	report.	71	A, 7400B,	 Total, Respirable 	· Analyte(TCLP, We	-META	Ba: +/- 57:H7:	+	Sale 4	‡ :	ر بر	/- Identif				و				- : :		
Special Ins	structions:		<u> </u>			Sho	• AHERA, Hquant, Mic	- 7400A,	T - Tot	WETALS RCRA 8, TC	ORGANICS - METH	Salmoneta: +/- E.coff O157;H7;	Isteria:	erobic coff:	Califorms	/ & M:	Vold: +		Sample vo (L) / Area	rix Code	Containers	Da		Time	EM N	lumber Use O	r (Laborator Inly)
Client sa	mple ID nuntb	er (Sample ID's n	nust the unique)	1 1 1 1 1 1 1 1 1		3	Sea	S S	DUST	P.S.	086	v, jw	MIC	ROBI	oLoc	Y	- A			Matrix	Ü#	Colled mrp/d		Collected	<u> </u>		
	·031712W					П	×								П			7	-71	A		3/L	1/12		8	73/	73
			1111111111				ी		. :									- 6	69	1		ī	**-				24
	-031712 E	<u></u>					1							1	П	\top		6	U			7					25
					.:		1,				- 1	1						6	69	V		て					210
5	0.700-2				· ·	H							П	1	П	\Box		1									
6				2			·					_	11		11		1	1.				· :		. :	ļ	:	
7	· · · · · ·	<u> </u>	···			H			\neg		М	\top	П	┪	\sqcap			十	<u> </u>								
8		······································				\vdash	 -	\Box	\dashv		Н	+	Н	+		+	1	1						: 7			
								-			Н	+	H	+	H	+	╅	+		Н		-	- -		 		
9 10		$\overline{7}$					·		\dashv		Н	1	H	+	1	+	+	+			+			×	····		:
	samples received:	(4)	/Additional	samples shall be l	eted on	2#20	had la	ner for				نلن	1	1	1.1	1 1	<u> </u>									-	
NOTE: R	El will analyza bicoming	samples based upon initernation receive in of Custody shall constitute an analytica	d and will not be respon	ns&ig for arrors or omis	sions in ca	doulati	ons resu	ulting (n	noon ith	ne inacol yment te	Jracy (of origin	al dai	a . By :	dgning month	dient	campany ast surch	rapres	entativo	agre	95 that	submis	sion of	the following sa	inples for	requested	4
Relinqui	shed By:	Justin Zm	<u>i</u>	Fed Ex			ree	Date)/Tlm	ne: 2	3/1	7/17	<u>.</u>						-	•	Cond	ition:	-		Sealed	int Ye:	isct
Received B	ory Use Only	May	Date/Ti				55			Carrie		-21	1	n	_				<u>↓</u>	mp. (I		_			es/No		Д
Results:	Contact	Phone Email Fax	Date	Time	Initia		-+	ntact				Phon	~			}					75	<u></u>	Tim		ini		-
!	Contact	Phone Email Fax	Date	Time	Initia	als	_ Co	ntact				Phon	e Ei	TRIF"	Fax	<u> </u>		D٤	Ite				_Tim	B	<u>Ini</u>	liais	1

Attachment I

Key to Count Sheets Count Sheets Analytical Procedures

Structures identifications consist of an Asbestos Type followed by a Structure Type

Asbestos Type

Structure Types

Α	=	Amosite	$\mathbf{F} =$	Fiber
An	=	Anthophyllite	B =	Bundle
C	=	Chrysotile	C =	Cluster
Cr	=	Crocidolite	M =	Matrix
Т	=	Tramolita		

ND = no structures detected

4 = other structure associated with a matrix

NAM = Non Asbestos Mineral

XGB = partly obscured by a grid bar

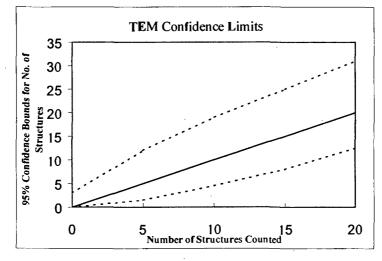
Sizing Conversion

1 length unit = 5 mm on screen = 0.278 micron
1.80 length units = 0.5 micron
18.0 length units = 5 microns

1 width unit = 1 mm on screen = 0.0556 micron

TEM Analysts

Jeanne S. Orr Nathan DelHierro Angela Heitger Jonathan Bernard Paul D. LoScalzo Mark Steiner Norberto Zimbleman Robert Workman



Upper and lower 95% confidence bounds for the number of structures counted assuming a Poisson distribution.

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltaae (KV)	100 KV
Magnification	20KX 10KX
Grid openina area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D =	0.056 um
Primary filler area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

Client :	Doll
Sample Type (A=Air, D=Dust):	A
Air volume (L) or dust area (cm2)	6701
Date received by lab	3/11/2
Lab Job Numben	231937
Lab Sample Number:	873123

	Analyzed by	713
	Analysis date	3/20/12
-	Method (D=Direct, I=Indirect, IA=Indirect, astred)	D
	Counting miles (ISO, AHERA, ASTM)	AH
	Grid storage location	Month Analyzed
	Scope Alignment	Date Analyzed

F-Factor Calculation (Indirect Preps Only):					
Fraction of primary filter used					
Total Resuspension Volums (ml)					
Volume Applied to secondary filter (ml)					

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	nsions	Identification	Mineral Class				1 = y	es, blank	= no
	Ond Opening	Туре	Primary	Total	Length	Width	Identification	Amphibole	с	NAM_	Sketch/Comments	Sketch	Photo	EDS
A	13-3	ND		, 										
,	H3-3	CM			F	ms A	- 80	You but	5	Les	in's			
	K3-3	M			Pi	2 P	70	Loca tent	57	Jeb	15			
	613-3	W		_		7		1					,	
	64-3	VD						AB 3/20/	z					
3	K3-6	ND					/	// //						
	1-3-6	WD			. :									
	63-6	WD												
	154-3	WO												
	14-3	M						·						<u> </u>

Laboratory name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Magnification	ZOKX 10KX
Grid openina area (mm2)	0.01
Scate: 1L=	0.28 um
Scale: 1D =	0.058 tim
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	·

Client :	Rok
Sample Type (A=Alr, D=Dust):	A
Air volume (L) or dust area (cru2)	669
Date received by lab	3/19/2
Lab Job Number:	231937
Lab Sample Number:	873124

F-Factor Calculation (Indirect Preps Only):						
Fraction of primary filter used						
Total Resuspension Volume (mi)						
Volume Applied to secondary filter (mi)						

Analyzed by	J13
Analysis date	3/20/12
Method (D=Dtrect, I=Indirect, IA=Indtrect, ashed)	D
Counting rules (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alianment	Date Analyzed

Gdd	Grid Grid Opening Structure				Dimensions		Identification	Mineral Class			1 = yes, blank = no			
Ond	Crid Operang	Туре	Priruary	Total	Length	Width	·	Amphibole	С	NAM.	Sketch/Comments	Sketch	Photo	EDS
A	44-4	ND		· ·										
<u> </u>	(44-4	CM				Pup	A	Sof in Ly	nf_	5/2	abbys			
2	E4-1	W				Pup	3	60 % un b	ast	5%	bons			
	C41	<u>UN</u>				,								
	B4-1	ND						B 3/20/1	2) 		
B	64-1	ND						/ / /						
	F4-1	ND									,			
	E4-1	γD								·	•		,	
	64-3	M			ŕ									
	F4-3	·ND				,				,				

Laboratoly name:	REI
Instrument	JEOL 100 CX (N) S
Voltage (KV)	100 KV
Maanification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D=	0.056 um
Primary filler area (mm2)	385
Secondary Filter Area (mm2)	
QA Tyoe	

of
A
071
1/2
1737
3125

Analyzed by	.713
Analysis date	3/20/12
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
Counting miles (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Allanment	Date Analyzed

F-Factor Calculation (Indirect Preps	Only):
Fraction of primary titter used	·
Total Resuspension Volume (mi)	
Volume Applied to secondary filter (ml)	

Grid	Grid Opening	Structure	No. of Str	uctures	Dime	sions	Identification	Mineral Class				1 = ye	s, blank	= no
0.10	Ond Opening	Туре	Primary	Totai	Lenath	Width	Identification	_Amphibote	С	NAM-	Sketch/Comments	Sketch	Photo	EDS
A	K4-4	ND		· 			<u>.</u>							
	44-4	ND		, 	Pas	A	Soh	abut	50/	del	· ·			
	(a4-4	ND			Prys	B	50%	ulmt	50/	del	me			
	E4-4	, QV			1	i	1.							
	FULL	W					160	8/20/12						
B	124-6	WD			·									
	F4-6	M				/								
	E4-10	DN		·		<u> </u>								
	F5-1	ND								-				
	65-1	ND							·					!

Laboratory name:	REI
Instmment	JEOL 100 CX (N) S
Voltage (KV)	100 KV .
Magnification	20KX 10KX
Grid opening area (mm2)	0.01
Scale: 1L=	0.28 um
Scale: 1D=	0.056 um
Primary filter area (mm2) Secondary Filter Area (mm2)	385
QA Tyoe	

Client :	Rok
Sample Tyoe (A=Alr, D=Dust):	A
Air volums (L) or dust area (cm2)	669
Date recaived by lab	3/19/12
Lab Job Number:	231937
Lab Sampla Number:	873120

F-Factor Calculation (Indirect Preps Only):									
Fraction of primary filter used									
Total Resuspension Voluma (ml)									
Volums Applied to secondary filter (ml)									

Analyzed by	TVS.
Analysis date	3/20/12
Method (D=Direct, !=Indirect, IA=Indirect, ashed)	D
Counting mies (ISO, AHERA, ASTM)	AH
Grid storage location	Month Analyzed
Scope Alignment	Date Analyzed_

Grid	Grid Opening	Strcture	No. of Str	uctures	res Dimensions identification Mineral Class				1 = yes, blank = no					
	Ond Opening	Туре	Primary	Total	Lenath	Width	ioonançation	Amphibole	С	NAM-	Sketch/Comments	Sketch	Photo	EDS
A	63-6	F		}	5/2	1	CD	· 	V					
	F3-6	ND:			, ,								,	
	E3-6	F		2	3_		(D)		V	·	\			
	C3-6	ND				Pap	1 80	winher	5-10	The a	elme			
	B4-4	ND				Rup		Lendent	3-12	The L	· ·			
3	15-1	ND							6	/ /				
	K5-1	ND			,			4	0 3/	20/2				
	H5-1	ND			·						·			
	[95-1	CN												
	F3-6	ND												

Analytical Procedures - AHERA

Transmission electron microscopy/energy dispersive X-ray spectrometry/selected area electron diffraction (TEM/EDX/SAED) was employed in the analysis of the samples, which were collected on 25 mm mixed cellulose ester air filters. A portion of each filter was collapsed with acetone and etched in a plasma asher. The etched filter was then coated with a thin layer of carbon in a carbon side down. The sample was then placed inside a condensation washer and treated with acetone to remove the filter matrix and expose any inert material.

For each sample, enough grid openings on a 200 mesh TEM grid are analyzed to ensure an analytical sensitivity of at least 0.005 structures/cc. A minimum of four grid openings from two preparations are analyzed for each sample. The grid openings are searched for fibrous structures which, if present are analyzed by SAED and/or EDX (elemental analysis). The AHERA protocol requires SAED confirmation of enough chrysotile asbestos structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures). Both SAED and EDX confirmation are required of enough amphibole structures on each sample to cause the sample to exceed 70 structures/mm² (usually 4 or 5 structures) per sample. Either SAED or EDX is required for the remaining asbestos structures of either type. The morphology of each structure is determined and the length and the diameter of any asbestos structures are recorded. Asbestos fibers, bundles, cluster and matrices were identified and recorded. The asbestos structures have been defined in AHERA as follows:

Fiber: is a structure having a minimum length greater than or equal to 0.5

micron with an aspect ratio of 5:1 or greater with substantially parallel

sides.

Bundle: is a structure composed of three or more fibers in parallel arrangement.

with each fiber closer than the diameter of one fiber.

Cluster: is a structure with fibers in random arrangements such that all fibers are

intermixed and no single fiber is isolated from the group.

Matrix: is a fiber or fibers with one end free and the other end embedded or

hidden by a particulate. The exposed fiber end must meet the fiber

definition given above.

If more than 50 asbestos structures are identified and confirmed on a sample, AHERA analysis may be terminated after completion of the grid opening, which contains the 50th structure. AHERA protocol requires the laboratory to reject any clearance sample which contains in excess of 25% total particulate loading or which appears to be unevenly loaded.

The AHERA protocol includes specific sampling requirements, including minimum numbers of samples and minimum air volumes. Specifically, the 70 structures/mm² clearance criteria is only allowed for sets five inside samples (collected in a group of 13 samples including: five outsides and three blanks) with volumes greater than 1200 liters (40 CFR Part 763, page 41894). Deviation from the AHERA sampling protocol may affect the validity of the analytical results. Analysis of samples collected by non-protocol methods are not accredited by NVLAP

Equations Used for Calculations

Area Analyzed, mm² = # GO counted x Average GO Area (mm)

Concentration, $s/cc = \frac{\text{\# Asbestos Structures}}{\text{\# GO Counted}} \times \frac{1}{\text{Volume (L)}} \times \frac{1}{\text{Average GO area (mm}^2)}$ X Eff. Filter Area (mm²) X IL

> Filter loading, s/mm² = # Asbestos structures Area Analyzed (mm²)

> > GO = TEM grid opening